

XXVIII. *Monograph of the Class Myriapoda, Order Chilopoda.* By GEORGE NEWPORT, Esq., *Fellow of the Royal College of Surgeons, President of the Entomological Society, &c.* Communicated by the Secretary. (Continued from p. 302.)

Read March 19th, April 2nd and 16th, 1844.

Class MYRIAPODA.

Order 1. CHILOPODA.

Family 1. CERMATIIDÆ.

THIS family is at present composed of only a single genus, *Cermatia* of Illiger, Leach, &c. It presents many analogies with the higher *Articulata*, and seems to represent in the osculant class *Myriapoda* the active and rapacious *Cicindela* among *Insects*. The general structure and habits of the two are in many respects very similar. The form of the head, the long setaceous antennæ, the prehensile forcipated mandibles, the elongated palpi, the projecting, compound organs of vision, the elongation of the limbs, and the more compact form of body, are all indications of a higher degree of organization in this family than in others of the same class, and place it as much above the other genera of *Myriapoda* as the more complete organization of the predaceous *Cicindela* places that genus at the head of true *Insects*. But while the general form of body, the elongated antennæ, and the compound organs of vision approximate the *Cermatiidæ* to *Insects*, the parts of the mouth, the structure of the legs, and more especially the multiplicity of the tarsal joints, bring them near to the *Arachnida*, to which also they are closely allied in their great activity and predaceous habits. The *Cermatiidæ* are as much superior in the whole of their anatomical structure to the other genera of *Chilopoda*, as the lowest *Chilopoda* are to the lower vermiform *Chilognatha*. The head and organs of vision resemble those of *Insects*, and the body is compact and formed

of a small number of segments, covered by only eight dorsal plates, each of which covers two ventral segments. These characters distinguish the *Cermatiidæ* from other *Myriapoda*, and are uniform in all the species. This great similarity of structure renders the identification of the species exceedingly difficult, the consequence of which has been, that naturalists have fallen into the error of assigning to particular species characters that are common to the genus. Thus, Fabricius has assigned to his species *C. longicornis* the number and scutellate form of the dorsal plates, with rounded margins, and median stomata; and elongated legs and antennæ; all which are common to the whole family. Mr. Templeton also has recently fallen into a like error in employing the minute spines on the edges of the plates for the same purpose. Indeed so similar is the structure of the different parts of the body in all the species, and so alike are the colours and markings on the body and limbs, that it is not to be wondered at that so few species have hitherto been recognised. Thus, I have never yet seen a species of *Cermatia* in which the legs were not more or less annulated with dark fasciæ, or which had not longitudinal bands of colour on the dorsal plates. Yet the colour and markings of the body, when carefully examined, are usually the most obvious indications of the species. When specimens are preserved in a dry state, their colours do not undergo much change, but remain tolerably perfect, and may then be relied on as some of the best characters. But when any *Myriapoda* have been long preserved in spirit, it is almost impossible to make out even the markings with much certainty, as the original colours disappear, and very little more than the former existence of coloured fasciæ, or even of the annulations on the legs, can then be distinguished. The only anatomical characters on which we can rely with certainty in the *Cermatiidæ* are derived from minute variations in the form, and the relative lengths and dimensions of the different structures. Mr. Templeton* has lately employed the relative length of the antennæ and legs to that of the body, and the size of the spines on the edges of the dorsal plates, as good marks of species. But excellent as are the first of these characters, and although they are almost invariable in uninjured specimens, they require to be taken in conjunction with other peculiarities, since the antennæ are very frequently injured, and the posterior legs, which easily fall off, may

* Transactions of the Entomological Society of London, vol. iii. part 4, 1843.

have been reproduced; in which case they would most likely be shorter than the original ones. The character derived from the spines on the scutella is of very doubtful utility. The most constant specific character I have yet met with, in addition to that first noticed by Mr. Templeton, is the relative length of the first and second basilar joints of the metatarsi†, more especially of the metatarsi of the posterior pair of legs. This character is of more value than that which is derived from the length of the posterior legs alone, or of the antennæ, the extremities of which are fragile, and are frequently lost. In regard to colour, it yet remains to be ascertained whether this differs in the two sexes, or whether even it varies in different individuals of the same sex. From the few opportunities I have yet had of comparing the sexes, I am inclined to believe that the colour and markings on both are very similar.

Family 1. CERMATIDÆ.

The characters of the *Cermatidæ* are distinctly marked. The head (TAB. XXXIII. fig. 36.) is very large and transverse, the eyes (*) tuberoso and aggregated: the basilar region almost absent (B, C), and coalesced with the enlarged cephalic (A). The mandibles are large, distant, and foreipated (*f* to *m*); the palpi elongated, and armed with spines; the labial teeth long and acute; and the antennæ very long, setaceous, and formed of a great multitude of joints.

The body is covered by eight dorsal plates or scutella (fig. 37.), the posterior border of which is rounded (*p*), deeply emarginated in the middle, thickened, and perforated by a longitudinal orifice or stoma (*o*). The margins of the plates are everted and armed with minute spines, and the surface is usually roughened with parallel series of spinulæ. The sides of the body are furnished with nine pairs of spiracles, as in the *Insecta*, the entrances to the tracheal vessels. The anal extremity has a double outlet, and the external organs of reproduction in the female are exertile, and are armed with a pair of forceps (TAB. XXXIII. fig. 38.); and in the male with two pairs of short styloform appendages.

The organs of locomotion consist of fifteen pairs of legs, each articulating

† In the first part of this paper (page 283-284) the joint that articulates with the tibia has been described by mistake as the *metatarsus* instead of *tarsus*, and the remaining joints as *tarsal* instead of *metatarsal*.

with a single ventral segment. The legs are margined on their upper and under surfaces with longitudinal ridges of spinulæ, and the coxa, femur, tibia and tarsal joints are armed at their distal extremities with elongated spines. The posterior pair of legs are always greatly elongated, the metatarsi are very long, and formed of a great multitude of short joints, and the femoral, tibial and tarsal joints are annulated with dark-coloured fasciæ.

These characters are found in the species of the continents of Europe, Asia, Africa and America, as well as in those from Australia and the islands of Ceylon, New Zealand and the West Indies.

Tribus 1. SCHIZOTARSIA, *Brandt.*

Familia 1. CERMATIDÆ, *Leach.*

Scuta dorsalia 8; singulo segmenta 2 ventralia obtegenti. Scutorum stigmata mediana. Pedes antennæque multiarticulatae.

Genus 1. CERMATIA, *Illig.*

Caput transversum. Oculi prominentes. Scuta dorsalia emarginata. Stomata latere incrassata. Pedes antennæque longissimæ.

1. *Cerm. coleoptrata*, capite scutellisque virescentibus asperis longitudinaliter saturatiùs trifasciatis, ventre pedibusque flavescens; articulis femoralibus tibialibusque angustè saturatiùs biannulatis, pedum pari postremo corpore bis longiore: articulo metatarsorum basali secundo quater longiore secundoque tertio bis longiore.—Long. lin. 9.

Scolopendra coleoptrata, *Linn. Syst. Nat.* 10th edit. ii. 1062.

Iulus araneoides, *Pallas, Spic. Zool.* fasc. 9. tab. 4. fig. 16.

Cermatia lineata, *Illiger.*

Scutigera coleoptrata, *Lamarck, Anim. sans Vert.*

Scutigera lineata, *Dufour, Annal. des Sc. Nat.* t. xi. p. 92.

Cermatia livida, *Leach, Zool. Misc.* iii. p. 38.

Scutigera araneoides, *Latr. Hist. Nat. des Crust. et Ins.* t. i. p. 77.

Scutigera livida, *Gray, Griffith's Animal Kingdom*, pl. 1. (*Insects*) fig. 2. 1832.

Cermatia livida, *Heineken, Zool. Journal*, vol. v. 1833, p. 41.

Scutigera araneoides, *Gervais, Ann. des Sc. Nat.* t. vii. 1837. p. 48.

Scutigera araneoides, *Lucas, Hist. des Anim. Articul.* t. iv. p. 537.

Cermatia coleoptrata, *Templeton, Trans. Ent. Soc. Lond.* vol. iii. part 4. p. 307.

Cermatia coleoptrata, *Newp. in Ann. & Mag. Nat. Hist.* xiii. p. 95.

Hab. In Hispaniâ et Ins. Madairâ. (v. in *Mus. Linn. et Brit.*)

Head with a triangular depression, the two sides of which end in a median sulcus between the eyes, and which is extended to the lower part of the face. Eyes prominent, black. Antennæ one-fifth longer than the body. Dorsal plates rounded at the angles and covered with numerous elevated points. Coxal joints of the legs impressed with minute punctures; metatarsi of the posterior pair of legs much longer than the remaining portions of the limbs, with the basilar or first joint four times as long as the second, and the second twice as long as the third. Coxal joint of the legs with a single annulus, with two annuli on each femoral and tibial joint near their articulations.

The original *Scolopendra coleoptrata* is still extant in the Linnean cabinet, with its name attached to it in Linnæus's hand-writing. This has enabled me to identify it with Leach's species, *Cermatia livida*, in the British Museum, from which this description has been taken. Besides six dried specimens in the Museum cabinet, there is also one in spirits, from which I have been able to ascertain its original colouring. Leach appears to have taken his description from a dried specimen which had originally been preserved in spirits, but which had entirely lost its proper colour. The following note, in Leach's hand-writing, is attached to his original specimen: "2. *Scutigera*, Lamarck (*Cermatia livida*, Leach, Zool. Misc. viii. p. 38. f. 136.): common, running about at midnight in the houses, June 14."

2. *Cerm. Floridana*, viridis, stomatibus dorsalibus albidis, fasciâ dorsali medianâ rufescenti lateralibusque duabus latioribus, ventre flavescente-viridi, scutorum spinis marginalibus uniformibus quàm in *Cerm. coleoptrata* evidentioribus.—Long. lin. 9-10.

Cerm. coleoptrata, Say, in *Journ. Acad. Nat. Sci. Philad.* ii. p. 5.

Hab. In Americâ Boreali, Floridâ. (*v. in Mus. Brit.*)

This specimen was taken by Mr. Doubleday in East Florida, North America, where it is very common, running about in the houses. It greatly resembles the species from Madeira, but seems to be distinct from it, the middle dorsal fascia being narrower than in *C. coleoptrata*.

3. *Cerm. rugosa*, aurantiaca, scutis rugosis nigrescentibus, stigmatibus dorsalibus scutellorum marginibus lineâque medianâ unicâ flavis, tibiis annulis tribus, tarso annulis duobus latis brunneis, pedum pari postremo articulo metatarsorum primo secundo bis longiore secundoque tertio etiam bis longiore.—Long. unc. $\frac{8}{10}$.

Cerm. rugosa, Newp. in *Ann. & Mag. Nat. Hist.* xiii. p. 95.

Hab. In Africâ. (*v. in Mus. Brit.*)

In this species the lateral margins of the scutella are almost straight, the posterior border is obtusely rounded, as in *C. rubrolineata*, and the marginal teeth arc regular, strong and very acute. The posterior part of the head is convex, and the yellow dorsal median line of the scutella is extended to the face, on which it ends in two narrow diverging yellow lines. The antennæ are twice as long as the body. The mandibles are yellow, with three brown, imperfect annuli, and the legs are very long, as compared with the length of the body, the posterior pair being nearly three times its length.

This species being from Africa, I have endeavoured to ascertain whether it is either of those figured by Savigny in the great work on Egypt, but have been unable to identify it with either of those species, and shall therefore regard it as distinct.

4. *Cerm. Oweni*, scutellis nigro-fuscis asperis fasciâ unicâ latâ longitudinali flavescente, antennis corpore plùs duplò longioribus, pedum pari postremo corpore ferè ter longiore: articulo metatarsorum primo secundo quater et ampliùs longiore.—Long. unc. $1\frac{1}{4}$.

Cerm. araneoides, Owen in *Cat. Mus. R. C. Surg.* part 4. fasc. 1. no. 335. p. 100.

Hab. —? (v. in *Mus. Coll. Reg. Chirurg. Londin.*)

This is a very distinct species, somewhat resembling *C. rugosa*, but much larger, and more nearly allied to *C. nobilis*. It has the dorsal stomata much elevated, and the yellow median fascia is extended to the face, and is there bounded on each side by a narrow black line. The legs are yellowish orange, but the annuli have almost disappeared in this specimen, which is preserved in spirit.

5. *Cerm. nobilis*, pallidè brunnea, lineâ medianâ flavescenti brunneo-marginatâ fasciâ utrinque longitudinali saturatiore transversalique ad cujuscunque scuti basin obscurâ, scutorum marginibus undulatis v. crenulatis spinis validis numerosis armatis, pedibus elongatis; pari postremo valdè attenuato corpore bis longiore: coxis flavescenti-brunneis juxta apicem cæruleo annulatis: femoribus virescentibus annulis duobus saturatè cæruleis: tibiis flavis obscurè annulatis: metatarsis rufescentibus articulo primo secundoque basilari æqualibus (?).—Long. unc. 2.

Cerm. nobilis, Templeton in *Trans. Ent. Soc. Lond.* iii. part 4. 1843, p. 307. pl. xvii. f. 1-4.

Cerm. nobilis, Newp. l. c. p. 95.

Hab. In Indiâ Orientali et Ins. Mauritii.

I have drawn up this description from Mr. Templeton's account of the species.

6. *Cerm. Downesii*, brunnea, lineâ unicâ angustâ medianâ fasciisque duabus latis lateralibus longitudinalibus saturatoribus, seutellis asperis margine undulatis, pedibus ochraceis: coxis annulo cæruleo unico: femoribus annulis duobus latis: tibiisque duabus obscuris: metatarsis rufescentibus articulo basilari primo secundo quater et ampliùs longiore, pedum pari postremo corpore bis longiore.—Long. unc. $1\frac{1}{2}$.

Hab. In Indiâ Orientali, Nemuck. (*v. in Mus. D. Hope.*)

This species very greatly resembles *C. nobilis*, and may be readily mistaken for it. But it differs in having a median dark line instead of a yellow one, and in the length of the basilar joints of the metatarsi, the first of which in all the legs is thrice as long as the second; while in Mr. Templeton's figure they are represented as being of equal length in *C. nobilis*. This character alone is sufficient to distinguish the two species. I have named this species in honour of — Downes, Esq., Assistant Surgeon in the Honourable East India Company's Service.

7. *Cerm. Hardwickei*, viridis, fasciâ utrinque longitudinali brunneâ, antennis rufescentibus corpore tertiâ parte longioribus, pedibus apice aurantiacis violaceo-annulatis; pari postremo corpore bis longiore: articulo metatarsorum primo secundo duplò longiore.—Long. unc. $1\frac{1}{10}$.

Cerm. longicornis ♀, *Hardw. in Linn. Trans.* xiv. p. 131.

Cerm. Hardwickei, *Newp. loc. cit.* p. 95.

Hab. In Indiâ Orientali, *Hardwicke.* (*v. in Mus. Brit.*)

Head with a triangular depression behind the eyes, with three impressed lines on the face, as in *C. coleoptrata*; labrum and front hairy; *labium* divided by a deep median suture, thinned at the dental margin, and covered with very fine hairs; dorsal plates very convex, with the middle portion elevated, and covered on each side with four or five irregular longitudinal series of very minute spines; posterior border of the plates deeply emarginated and more rounded than in *C. coleoptrata*, with the marginal spines strong, uniform and very acute. Præanal scale elongated, quadrate, and armed with a pair of curved, unidentated, sharp-pointed forciples. Inferior surface of the legs with a few scattered fine hairs. The antennæ are not annulated, as represented in the drawing in the 'Linnean Transactions,' vol. xiv. tab. 5. fig. 1. In General Hardwicke's original drawings in the British Museum, MSS., vol. 11,002. no. (19.) 86, the longitudinal middle portion of the plates is of a light red, or orange colour, and the metatarsi are orange-coloured, except in the posterior pair of legs, which are annulated throughout; the basilar joint of the metatarsus of the posterior pair of legs is twice as long as the second joint.

These characters distinctly show that this is not the *S. longicornis* of Fabricius, which is described with “*antennæ corpore duplo longiores, flavæ*,” and the body as “*supra fuscus lineâ dorsali ferruginâ, subtus flavescens*.” General Hardwicke’s species has *two* longitudinal fasciæ, and the antennæ are only one-third longer than the body. As the specific name employed by General Hardwicke is thus referable to a species already described, I have changed the name of his species to *Cerm. Hardwickei*.

8. *Cerm. longicornis*, Fabr. Entom. Syst. ii. 1793, p. 389.

Hab. In Tranquebariâ.

9. *Cerm. Guildingii*, brunnea, fasciâ unicâ latâ flavâ, stigmatibus dorsalibus ore nigris, pedum pari postremo metatarsis longissimis: articulo basilari secundo triplò longiore: femoribus annulo unico: tibiis articulisque tarsi biannulatis.—Long. lin. 9.

Hab. In Ins. Caribæâ S^{ti} Vincentii. (*v. in Mus. D. Hope.*)

This species is very closely allied to *Cermatia longitarsis*, and may readily be mistaken for it, as the metatarsal joints are equally long as in that species, but it seems to differ in the relative lengths of the first and second basilar joints.

10. *Cerm. longitarsis*, virscens, fasciâ longitudinali unicâ medianâ pallidiore, capite parvo; fronte piloso, pedibus postremis corpore plus duplò longioribus; metatarso reliquo membro duplò longiore, pedibus flavis annulis duobus latissimis violaceis in quoque articulo femorali tibialique.—Long. unc. 1.

Cerm. longitarsis, *Newp. in Ann. & Mag. Nat. Hist.* xiii. p. 95.

Cerm. longipes, *Lam. Anim. sans Vert.* v. p. 29.?

Hab. —? (*v. in Mus. Brit.*)

The most marked characters of this species are the single longitudinal dorsal fascia, the great length of the metatarsal joints of the posterior pair of legs, and the breadth and dark colour of the annuli, which cover the chief portion of the legs. The antennæ are one-fourth longer than the body. The spines on the scutellâ are ranged on the dorsal surface in two somewhat approximated waved median series, but are distributed irregularly over the other portions of the scutella. The margins of the scutella are very slightly waved, and the marginal spines are small, acute and somewhat approximated: the coxæ of the legs are very short and thickly punctured.

This specimen, in the British Museum collection, was found in a bottle, which seems to have formed part of the original collection of Sir Hans Sloane.

I have some hesitation in naming this species, which may be the *Cermatia longipes* of Lamarck, as the relative proportions of the body, antennæ and posterior legs agree with those given by Mr. Templeton, who however has assigned no other characters by which the species might be determined.

11. *Cerm. dubia*, brunnescens, fasciâ unicâ pallidiore medianâ maculâque nigrescenti utrinque ad marginem anteriorem posticum cujuscunque scutelli, pedibus flavescentibus; articulo quoque femorali tibialique angustè biannulato, pedum paris 12^{mi} articulo metatarsali primo secundo quater longiore.—Long. unc. 1.

Cerm. dubia, *Newp. l. c.* p. 95.

Hab. —? (*v. in Mus. Brit.*)

This specimen was found in the same bottle with *C. longitarsis*, of which I was at first disposed to regard it as the other sex; but on closer examination it presented some marked differences. Thus, in addition to the characters above given, the dorsal plates are more rugose, and the spinous tuberosities larger and more thickly placed; and the marginal spines are larger, stronger, and more uniform in size. The antennæ are one-half longer than the body. The legs are roughened, and covered with fine hairs; the emargination of the dorsal plates is deep and blackened; and there are three blackish patches at the posterior part of the head. I am unable to give the length of the posterior pair of legs or of their metatarsi, as the specimen had lost these parts, and have therefore taken the relative lengths of the joints from the twelfth pair. These characters seem sufficient to distinguish this as a species.

12. *Cerm. Latreillei*, scutis capite facieque nigris, ventre stigmatibus dorsalibus macularumque parvarum serie obliquâ capitis utrinque aurantiacis, pedibus flavis; articulis femoralibus tibialibusque nigro biannulatis; metatarsorum articulo primo nigrescente secundo quater longiore.—Long. unc. 1.

Hab. In Novâ Hollandiâ. (*v. in Mus. D. Hope.*)

Latreille (in 'Nouv. Dict.' xxx. 447) has mentioned the existence of a species of *Scutigera* from New Holland, but has not named it, or given any description of it. I propose therefore to name this species in honour of that distinguished naturalist. The antennæ and posterior pair of legs of this beautiful species are wanting in Mr. Hope's specimen.

13. *Cerm. Vesuviana*, virescenti-flava, scutis asperis subcarinatis fasciis duabus pallidioribus (?), mandibulis flavis, pedum postremorum femoribus annulo unico: tibiis tarsisque annulis duobus atro-violaceis; articulo metatarsali primo secundo quintuplò longiore, antennis corpore ferè bis longioribus, metatarsis rufescentibus.—Long. lin. 10.

Scutigera Vesuviana, Costa, *Mem. Zool.* i. p. 52?

Hab. In Regno Ncapolitano. (*v. in Mus. D. Hope.*)

I am greatly inclined to believe that this is the *Scutigera Vesuviana* of Costa, although the description given of his species is not sufficiently precise to identify it. The following are his remarks on it:

“*Scutigera Vesuviana.*

“*Scutigera murina*, mandibulis flavescentibus, antennis crassis subconicis, pedibus carnis.

“Longa lin. $5\frac{6}{10}$; larga lin. 11.

“Tutta di color marrone più chiaro nel margine. Antenne mediocri di no. 50 articoli anellari e decrescenti, quci degli apici orbiculari. Mandiboli gialli. Capo e tarsi di color carniccio. Femori inermi. Corpo coperto di 7 scudi marginati, e quasi posti ad embrice.”

This species, Costa says, lives in volcanic regions where smoke comes from the ground, and feeds on living and dead animals.

14. *Cerm. rubrolineata* (TAB. XL. fig. 1.), saturatè aurantiaca, fasciis tribus longitudinalibus castaneis, femoribus juxtà apicem annulo unico, tibiis tarsis articuloque metatarsali primo annulis latis duobus violaceis, articulo metatarsali primo secundo quadruplò longiore.—Long. unc. 1.

Cerm. rubrolineata, *Newp. Ann. & Mag. Nat. Hist.* xiii. p. 96.

Hab. In Indiâ Orientali, *Hardwicke.* (*v. in Mus. Brit.*)

Posterior part of the head nearly flat, without depressions; antennæ a very little longer than the body; dorsal plates very much flattened, with their posterior borders more rounded and obtuse than in *C. Hardwickei*, with the median longitudinal portion formed by a line of minute spines. Præanal scale short; quadrate, deeply emarginated. Marginal spines of the scutella somewhat scattered. Posterior pair of legs about one-fifth more than twice as long as the body. Scutella and body very slightly hairy.

This species approaches the *Lithobiidæ* in the broad and flattened form of the dorsal plates, and in the rounded form of their posterior borders. It was placed in the cabinet by the side of *C. Hardwickei*, but it is a very distinct species.

15. *Cerm. capensis*, Templeton in Trans. Ent. Soc. Lond. vol. iii. part 4. 1843, p. 308. pl. xvi. fig. 8-11.

16. *Cerm. maculata*, flava, fasciâ medianâ longitudinali nigrâ maculisque duabus nigris in scutis singulis, scutorum lateribus irregulariter undulatis, stigmatibus dorsalibus ad latera saturatè aurantiacis, articulis tibialibus tarsalibusque singulis latè nigro bifasciatis.—Long. lin. 9.

Cerm. maculata, *Newp. l. c.* p. 96.

Hab. In Novâ Hollandiâ, ad fl. Cygnorum. (*v. in Mus. Brit.*)

Head with two longitudinal rows of black spots on the face, anterior to the eyes, and a single median row on the upper posterior surface. Mandibles with a single spot at their external distal angles. Dorsal plates depressed, roughened, with the sides sinuous; each plate with a slight dorsal median-elevation formed by a double row of minute, approximated spines, somewhat as in *L. rubrolineata*, but with the posterior border of the plates thin and deeply emarginated, and the sinuation of the lateral margins caused by a partial folding of the tegument and projection of the spiracles at the front of the coxæ. Legs with the tibial and tarsal joints of each with broad black rings. Basilar joint of the metatarsi of the tenth pair more than twice as long as the second joint. Colour yellow, with a longitudinal dorsal band, and two spots on each dorsal plate, and the annulations on the legs black; stigmata orange.

This is a very beautiful species; but the specimen from which I have derived my description is in bad condition, so that I have not been able either to ascertain the length of the antennæ or of the posterior legs. The black markings on the back, and the orange-coloured stomata, contrast beautifully with the bright yellow ground of the body and legs.

17.? *Cerm. Australiana*, scutis depressis posticè angustatis marginibus rectis, corpore flavescente fasciâ medianâ longitudinali maculisque utrinque duabus brunneis stomatibus dorsalibus aurantiacis, articulis femoralibus annulo unico tibialibus tarsalibusque singulis annulis duobus latissimis violaceis; articulo metatarsali primo nigrescente secundo triplò longiore.—Long. lin. 8.

Hab. In Novâ Hollandiâ Occidentali. (*v. in Mus. D. Hope.*)

I am doubtful whether this is not a variety of the last species, from which however it seems to be distinct by the straight lateral margins of the dorsal plates. I have named it therefore with a query.

18. *Cerm. Smithii*, virescenti-marmorata fasciâ medianâ unicâ saturatiore, scutis dorsalibus

rugosis margine parùm undulatis: posticè angustatis rotundatis profundè emarginatis subdepressis, pedibus postremis corpore triplò longioribus; metatarso femore tibiâque tarso plùs duplò, articulo metatarsali primo secundo tertiâ parte, secundo tertio duplò longiore.—Long. lin. 8.

Cerm. Smithii, *Newp. l. c.* p. 96.

Hab. In Sinu Insularum Novæ Zealandiæ. (*v. in Mus. Brit.*)

This is the first species of *Cermatia* obtained from New Zealand, and agrees precisely in its general characters with those from Africa and Asia.

Family 2. LITHOBIIDÆ, *mihî*.

The species of the genus *Lithobius* of Leach have many marked characters that distinguish them at once from the *Scolopendridæ*, with which they have hitherto been connected. I have therefore separated the *Lithobii* as a distinct family.

The *Lithobiidæ*, the common Centipedes of this and most of the northern countries of Europe (TAB. XXXIII. fig. 27 to 34; and TAB. XL. fig. 2 and 3.) have the cephalic portion (A) of the head very broad, depressed, cordate, and almost covering the basilar portion, which exists only as a short narrow ring (B, C). The eyes (*) are stemmatous, and vary in number and magnitude; and the antennæ are setaceous, elongated, and formed of a multitude of short joints (D). The mandibles (G) are large and forcipated: the labium (b, c) is broad, extended forwards, and divided by a deep median sulcus, and armed in front (e) with distinct minute teeth. The body is formed of sixteen imbricated, depressed, alternating, long and short segments (fig. 33.), that have the posterior margin straight, or slightly excavated, and the angles of the ninth, eleventh, thirteenth and fifteenth are acute and elongated. The seventh and eighth segments are quadrate, and nearly equal. There are fifteen pairs of legs; the four posterior pairs are much lengthened, and their coxæ (fig. 34a) have each a deep, elongated oval, transversely furrowed excavation † on their under surface. The males are usually larger and more robust than the females, and have the head much broader; and the anal segment of the body is truncated (TAB. XXXIII. fig. 34.), and has a single pair of minute styliform

† This was first noticed in the common *Lithobii* of this country by Mr. Walker ('Entomologist,' Jan. 1842, p. 239). I have since found it in all true *Lithobii* from every part of the world.

appendages. In the female the anal segment is divided by a median sulcus, and is armed on each side with a pair of foreeeps.

The species of this family are exceedingly common, and reside beneath the rotten bark of trees, under stones, and in crevices in the earth. They shun the light, and run with great rapidity. Like the *Cermatiidæ* they are of carnivorous habits, although Mr. Westwood* and some other naturalists believe that they feed partly on vegetable matter. But this most certainly is a mistake, and probably has arisen from their being found amongst decaying vegetables. Their presence there is to be attributed to their habit of preying on vegetable-feeding larvæ found in such localities, and not to their own predilection for vegetable food. The decidedly carnivorous form of their organs of nutrition, the forcipated structure of the mandibles, and the strongly denticulated labium distinctly indicate their kind of food (TAB. XXXIII. fig. 28 to 32.), which consists of soft-bodied larvæ, small earth-worms and *Onisci*. I have seen a *Lithobius Leachii*, that had been confined for some weeks without food, attack with great ferocity a living earth-worm, that was more than twice its own length, the instant it was within its reach. It seized its prey transversely with its powerful mandibles; and notwithstanding the writhings and contortions of the worm, which coiled around its body, the *Lithobius* did not appear to be at all incommoded, but held securely on, and seemed only to increase the energy of its gripe. It persevered in its attack for several hours, until the worm became exhausted. The *Lithobius* then succeeded in biting off a portion of one end of the worm, and fed upon this to repletion, retaining it constantly between its mandibles; and, like the *Arachnida*, appeared to squeeze and to suck out the juices. Being accidentally disturbed, the *Lithobius* dropped its prey and attempted to escape; but as soon as its alarm had subsided it began again to search for it, using its antennæ as explorers, and the instant it was discovered darted on it as at first. When several specimens of *Lithobii* are confined in the same vessel without food, they attack and destroy each other, more especially the very young specimens; but this is only when urged by hunger. However much the *Lithobii* may suffer from want of food, they will not attack the *Geophili*. When much pressed for nourishment, they will sometimes prey on the cooked flesh of *Vertebrata*, but this is almost invariably

* Entomologist's Compendium.

a poison to them, and they usually die within a few hours. Their bite is poisonous to small *Articulata*; and I have little doubt that they inject a fluid into the wound from the apex of the mandibles, and that a poison-gland is contained in the base of these organs, as I have discovered in *Scolopendra*, although I have not yet detected it in *Lithobius*. Degger*, who was more practically acquainted with the habits of *Insecta* and *Myriapoda* than almost any other naturalist of the last century, says, "J'ai vû qu'une mouche, qui fut mordue par une de ces Scolopendres, mourut presque dans l'instant, ce qui semble être une marque que leur morsure est vénéimeuse." But the effect of the bite of *Lithobius* was not so marked on the worm, although I doubt not that it was more rapid on the fly; precisely as the bite of the larva of the glow-worm, as I have often witnessed, almost instantaneously paralyses its natural prey, the garden snail, *Helix hortensis*, which dies quickly from the effects of repeated bites.

Very little is at present known of the mode of development of the *Lithobiidæ* beyond the fact that their young acquire periodic additions of segments, legs and eyes, like the *Iulidæ*; and also, as I have satisfactorily ascertained, that they cast their tegument at distant periods of growth, and are capable of reproducing lost parts, like the *Crustacea* and *Arachnida*. The *Lithobiidæ* are frequently found with one or more of the legs much smaller than the rest, although with the same number of joints. These are limbs that have been reproduced, perhaps even a second time, as I have elsewhere shown†. The only instance I am acquainted with of the development of supernumerary limbs in the *Myriapoda* exists in a specimen of *L. Leachii* in my own collection. In this instance the anterior or prothoracic leg, on the right side, has the tibia exceedingly short; but the tarsus is enlarged, and not only gives attachment to a metatarsus, formed of two joints and a claw, but also to another tibial joint, from the middle of which a second biarticulated metatarsal joint is produced, and from its extremity also a third; each joint having its complete armature of spines and hairs.

The generic characters of the *Lithobiidæ* have been almost as imperfectly studied as their natural history. The best characters of the family are the

* Mémoires pour l'Histoire des Insectes, tom. vii. p. 557.

† Phil. Trans. 1844, part ii. pp. 283 to 288.

number, alternation, and form of the dorsal plates (TAB. XXXIII. fig. 33.), and the elongations of the angles of the eight posterior ones, together with the excavations on the four posterior pairs of coxæ (fig. 34 a). These characters are as well-marked in the New Zealand and Tasmanian species as in the American and European. The number of separate ocelli, organs of vision, are also good secondary characters of species, and the great size and singleness of these mark one distinct genus, *Henicops* (fig. 27*, TAB. XXXIII., and fig. 3, TAB. XL.).

The specific characters are founded chiefly on the number of the ocelli and labial teeth in the adult, and on the colour and markings of the body. The first of these are in general good structural characters, but they are occasionally subject to some variation. Thus, a tooth is sometimes deficient (fig. 31.) on one half of the labium, or is supernumerary on the other. When a tooth is absent, the space it should have occupied is not filled up; and when a supernumerary tooth is developed, the two are in general crowded into a narrow compass. On comparing the two sides of the labium these irregularities are readily detected. The relative size of the species is also of some value, and the colour and markings are good characters in the recent state; but they disappear and become confused in dried specimens.

Familia 2. LITHOBIDÆ.

Scuta dorsalia 15, subquadrata, inæqualia: angulis elongatis acutis. Coxarum paria posteriora excavationibus ovatis. Antennæ elongatæ setacæ.

Genus 2. LITHOBIUS, *Leach*.

Antennæ multiarticulatæ. Caput latum, depressum. Ocelli numerosi. Labium latum, lamelliforme, anticè denticulatum, medio sulcatum emarginatum.

1. *Lith. variegatus* (TAB. XL. fig. 2.), capite magno quadrato, ocellis utrinque 16, mandibulis magnis prominentibus, labio complanato profundè punctato anticè margine dilatato; denticulis 14 validis acutis nigris, corpore depresso brunneo maculis duabus in unoquoque segmento saturatoribus, pedibus nigro-fasciatis.—Long. lin. 7, v. 8.

Lith. variegatus, *Leach*, *Zool. Misc.* iii. *Lithobius*, sp. 2. p. 40. *Walker*, 'Entomologist,' Jan. 1842, p. 238. *Leach*, *Edinb. Encyclop.* vii. 409. *Id.* *Trans. Linn. Soc.* xi. 382. *Gervais*, *Ann. des Sc. Nat.* 1837, p. 49. sp. 3. *Lucas*, *Nat. Hist. Anim. Artic.* t. iv. p. 543. *Newport*, *Annals & Mag. Nat. Hist.* xiii. p. 98.

Hab. In Wimbledon Common prope Londinum. (v. in *Mus. Brit.*)

From the general appearance of this species, the large size of the head, and the length and annulation of the legs, I am induced to place it at the head of the genus as coming very near to the *Cermatiidæ*. There is not a doubt of its distinctness as a species, although M. Gervais* formerly imagined the contrary. It is exceedingly local, but exists in great profusion in some places. There are more than thirty individuals, including males and females, in the cabinet at the British Museum, all of which were captured at Wimbledon. The annulations on the thighs and tibiæ of the posterior five or six pairs of legs sufficiently distinguish this from every other British species. The sexual differences in the head of this species are very strongly marked. The head of the female is much smaller and rounder than that of the male, and the mandibles are less projecting. The species varies in the entire absence of annulations on the thighs and tibiæ, as well as in size, some specimens being very much larger than others. This variety seems to be found in Ireland, as there is a specimen which had been placed in the cabinet at the British Museum by the side of *L. forficatus*, ticketed in Leach's hand-writing, "Ireland," and which specimen seems to have occasioned some mistake in the description of *L. forficatus*.

2: *Lith. rubriceps*, capite magno subquadrato saturatè rubro, ocellis parvis utrinque 14, labio complanato profundè punctato; denticulis 14 parvis acutis nigris, corpore subolivaceo, labio mandibulisque flavescentibus, pedum paribus posterioribus latè nigro obscurè annulatis.—Long. $1\frac{4}{10}$ unc.

Hab. In Hispaniâ Australi. (v. in *Mus. Brit.*)

The head is large, subquadrate, punctured, and narrowed anteriorly, and its lateral and posterior borders are distinctly margined. The ocelli are small, black, and fourteen on each side: the antennæ are yellow and pubescent, with fifty-one joints: the labium is flattened and deeply punctured, with its external angles produced, and the dental margin nearly straight and armed with fourteen minute black teeth: the mandibles are large, yellow, and tipped with black. The body is brown or subolivaceous; and the legs yellowish with the posterior pairs indistinctly annulated, with the tibial joints compressed, densely ciliated, orange-yellow, and with the claw black.

This is a magnificent species, closely allied to the last, and is the largest yet discovered. It very much resembles the variety of *L. variegatus* from Ireland, but is much larger.

* Annales des Sciences Naturelles, Janvier 1837.

3. *Lith. fasciatus*, saturatè testaceus, scutorum dorsalium lateribus fasciâque latâ longitudinali medianâ nigrescentibus, ocellis 18 magnis nigris, labii denticulis 18 minutis nigris, labio mandibulis pedibusque flavis: metatarsorum articulis ferrugineis pilosis.—Long. $1\frac{1}{4}$ unc.

Hab. In Italiâ ad Florentiam Ncapolinque. (*v. in Mus. D. Hope.*)

The head is ferruginous, convex, subquadrate, with scattered punctures; the ocelli are very large, especially the four upper ones, and together with the sides of the head are of a deep black; the antennæ are ferruginous, pubescent, with forty-one joints: the labium is broad, flattened, punctured and hairy, with the dental border nearly straight, and armed with eighteen minute black teeth, of which one or more of the external ones are often absent; the body is polished, with a black longitudinal fascia, often more or less indistinct. Mandibles, labium and legs yellow, the five posterior legs blackened or annulated; metatarsal joints very hairy, ferruginous; claws black; articular spines of all the legs very short, excepting one on the tarsus, which is much elongated.

This is a fine species, collected by Mr. Hope both at Florence and Naples. It approaches very much in its appearance to *L. variegatus*, but is a great deal larger.

The specimens obtained from Naples are usually of a much lighter colour, but in other respects they agree precisely with those from Florence.

4. *Lith. Mexicanus*, latior quàm *L. forficatus*, ocellis utrinque 9 haud approximatis. *Lith. Mexicanus*, *Perbose in Rév. Zool.* Sept. 1839, p. 261.

5. *Lith. multidentatus*, lateritius, pedibus flavescentibus, laminis dentalibus distinctis margine rotundatis angulis externis subproductis denticulis 16 conspicuis armatis, capite quadrato; subsegmento antennali polito impunctato, labio lævi polito, antennis subpilosus articulis 4 basalibus longitudine ferè æqualibus.—Long. unc. $\frac{3}{4}$.

Hab. Prope Novum Eboracum, *E. Doubleday.* (*v. in Mus. Brit.*)

6. *Lith. Americanus* (TAB. XXXIII. fig. 29.), ferrugineus, capite magno subquadrato posticè ad marginem elevato; subsegmento antennali sparsè profundè punctato, antennis pubescentibus, ocellis nigris utrinque 24–26, labio complanato polito margine ferè recto: denticulis 10 parvis nigris subapproximatis, scutis dorsalibus lævibus convexis subquadratis posticè rectis, segmento præanali piloso, pedibus validis flavis spinis validis armatis. Long. unc. 1; lin. 1.

Lith. spinipes, *Say, Journ. Acad. Nat. Sci. Phil.* ii. p. 108.; *et in Œuvr. Entom. Ed. M. A. Gory*, i. p. 21.? *Lucas, l. c.* iv. p. 543.?

Hab. In Americâ Boreali. (*v. in Mus. D. Hope.*)

This species resembles *L. forficatus*, but is larger, and is distinguished from it by the flattened form of the lip, with its straight margin, as well as by the form of the dorsal plates. In the form of the labium and disposition of the teeth it is allied to *L. Sloanei*, but differs from that species in the number of teeth, and in the straight margins of the segments. It differs also from *L. pilicornis* in the labium being flattened, polished, and entirely without hairs. This species varies in having *eleven* instead of ten teeth. I am inclined to believe that it is the *L. spinipes* of Say, as the spines on the legs are largely developed. The size of the spines is the chief character assigned by Say to his species; but this is insufficient to distinguish it, as the articular spines, more or less developed, are common to the whole genus. I have therefore described it as a new species. The other characters given by Say to his species are also common to the whole genus.

7. *Lith. planus* (TAB. XXXIII. fig. 32.), ferrugineo-variegatus, capite magno subquadrato polito posticè ad marginem elevato incrassato, antennis brevibus pubescentibus, ocellis utrinque 23, labio polito pilis raris; laminis dentalibus lunatis angulis externis anticè elongatis profundè emarginatis: denticulis 14 acutis nigris, scutis dorsalibus complanatis rugosis margine elevatis, pedibus nudis spinis articularibus parvis.—Long. lin. 8, v. 9.
Hab. In Americâ Boreali. (v. in *Mus. D. Hope.*)

The characters of the labium and teeth of this species are very distinct. The deep emargination is formed by the approximation of two slightly crescentric dental plates, set with strong, sharp, elongated teeth, which distinctly indicate the predaceous habits of the species. The general characters of the head, labium and teeth closely connect this species to *L. variegatus*. The labium and mandibles are bright orange; head orange, mottled; the eyes and sides of the face blackish, and the antennæ annulated and pubescent. The dorsal surface of the body is flattened and slightly rugose, and the legs are naked, brownish yellow, with small articular spines.

8. *Lith. Hardwickei*, antennis valdè pilosis articulis quibusdam elongatis, ocellis magnis utrinque 18, labio complanato margine dentali excavato: denticulis utrinque 5-8, laminâ ventrali præanali pilosâ tuberculatâ.—Long. lin. 8.
Lith. Hardwickei, *Newp. Ann. Nat. Hist.* xiii. p. 96.
Hab. Ad Singapore. (v. in *Mus. Brit.*)

This species very much resembles *L. forficatus*, but is smaller and of a lighter colour. The antennæ are very hairy, with forty-one joints, some of which are one-half longer than the others. The great characteristics of this species are the number of the ocelli, the form of the dental plates, and the tuberculation of the præanal plates, which distinguish it from the British species. I am not certain of the normal number of the teeth, since there is only a single specimen of *L. Hardwickei* in the British Museum, and in this the teeth are abnormal, there being only five on one plate and eight on the other.

9. *Lith. longicornis*, antennis corporis ferè longitudine pilosis 56–60-articulatis, capite subquadrato; subsegmento antennali lævi anticè angustato, ocellis parvis utrinque 10–14, laminis dentalibus angustatis: denticulis 8 acutis nigris, scutis dorsalibus impressione utrinque laterali curvâ, pedibus nudis; spinis subfemoralibus minutis.—Magn. *Lith. forficati*.

Lith. longicornis, Risso, *Europ. Merid.* v. p. 154? Gervais, *Ann. Sc. Nat.* Janv. 1837, p. 49. sp. 4? Lucas, *Hist. Nat. Anim. Art.* p. 543. sp. 4?

Hab. ———? (v. in Mus. Linn.)

This specimen is about the size of *L. forficatus*, and stands beside it in the Linnean cabinet. I believe it to be the *L. longicornis* of Risso, but have been unable to identify it with the description given by that author, excepting as regards the length of the antennæ. It is a distinctly-marked species, of a ferruginous colour, and has the fifth dorsal plate narrowed, and longer than in most other species, and the angles of the plates are only slightly produced. The ocelli also are few in number; the labial teeth are black and acute, and the labium is slightly narrowed and punctured. From the length of the antennæ, the slight development of the angles of the short dorsal plates, and the clustered ocelli, it seems to make a near approach to the *Cermatiidæ*.

10. *Lith. forficatus*, ferrugineus, capite ovato-quadrato; subsegmento antennali impressionibus sparsis obsolete, antennis pubescentibus, labio lævi polito; laminis dentalibus distinctis paulò angustatis: denticulis 12 minutis æquidistantibus acutis, ocellis 22–24, pedibus ferè nudis; articulis brevibus: spinis subfemoralibus nullis, squamâ præanali pilosissimâ, scutis dorsalibus lævibus margine postico tenui angustato, laminâ 5tâ subquadratâ haud elongatâ lævissimè excavatâ: 7mâ margine postico recto.

Scolopendra forficata, Linn. *Syst. Nat.* ed. 10. i. p. 1062. *Fabr. Entom. Syst.* ii. p. 390.

Lith. vulgaris, *Leach in Edinb. Enc.* vii. p. 409. *Id. in Linn. Trans.* xi. p. 382. *Id. in Zool. Misc.* iii. p. 40.? *Gerv. in Ann. Sc. Nat.* vii. (1837), p. 49. *Lucas, l. c.* iv. p. 543. Lith. lævilabrum, *Leach (olim in) Edinb. Enc.* vii. p. 409. *Walker in Entomologist*, Jan. 1842, p. 237.

Hab. In Europâ. (*v. in Mus. Linn.*)

The specimen from which this description is taken is in the Linnean cabinet, and has a ticket attached to it with the name "*forficata*" in Linneus's handwriting. It is distinct from the specimen in the British Museum, described by Dr. Leach as *L. forficatus*, as the labium in the Linnean specimen is smooth and without punctures, while the labium in Leach's species is covered with impressed dots. It differs also in the entire absence of subfemoral spines, and in the equidistant arrangement of the labial teeth. There is a specimen in the British Museum with the name *L. "lævilabrum"* attached to it, in Dr. Leach's handwriting, which, from the small number of ocelli, fifteen on each side, the hairiness of its legs, and the indistinctness of the joints of the antennæ, I am satisfied is only the young of this, or a closely allied species. The very young *Lithobii* have fewer ocelli and teeth than the adult.

11. *Lith. Leachii* (TAB. XXXIII. figs. 30, 31.), saturatè ferrugineus, capite lato cordato; subsegmento antennali profundè punctato, antennis pilosis, labio subconvexo punctato, ocellis utrinque 24-26, laminis dentalibus minutis: denticulis 12 nigris e quibus tres interiores utrinque subapproximatæ, antennis palpisque pilosis, pedibus validis flavis: spinis subfemoralibus magnis pilis raris.—Long. unc. 1.

Lith. forficatus, *Leach in Edinb. Enc.* vii. p. 408. *Id. in Linn. Trans.* xi. p. 381. *Id. in Enc. Brit. Suppl.* i. p. 431. pl. 22. *Id. in Zool. Misc.* iii. tab. 137. *Treviranus, Zeitschr. Phys.* ii. p. 18. pl. 4-6. (1817.) *Samouelle, Entom. Comp.* (1819), p. 115. *Gerv. in Ann. Sci. Nat.* vii. (1837), p. 49. *Lucas, Hist. Nat. Anim. Art.* iv. p. 540.

Hab. In Europâ. (*v. in Mus. Brit.*)

There is only a single specimen of this species in Dr. Leach's cabinet which at all answers to the description he has given. I am strongly inclined to suspect that some oversight was committed by Leach in the description he has given of this species, the labium of which he describes as "toto profundè impresso punctato." This character by no means agrees with the specimen, which has only the anterior portion of the labium deeply punctured. I suspect that he derived this character in part from the specimen of *L. variegatus* that was

placed by the side of it, and which *has* the whole of the labium deeply punctured. Leach might have been led to this mistake by the entire absence of annulation on the legs of this variety of *L. variegatus*. What seems to support this conjecture is Leach's note on the locality of *L. forficatus*:—"Habitat in Europâ sub lapidibus. In Angliâ, Hiberniâ rarior."

12. *Lith. Sloanei*, capite magno subquadrato; subsegmento antennali profundè punctato, ocellis utrinque 24-26, antennis 40-articulatis pilosiusculis, labio complanato polito obsolete punctato angulo anteriore exteriore paulùm producto, denticulis 8 brevibus obtusis nigris e quibus tres utrinque interiores subapproximatæ, pedibus longis subnudis; spinis subfemoralibus validis, pedum pari postremo dimidium corporis longitudine æquante.
—Long. $1\frac{5}{10}$ unc.

Lith. Sloanei, *Newp. l. c.*

Hab. ———? (*v. in Mus. Brit.*)

This specimen was found in an obscure collection of *Scolopendræ* in the British Museum, and, from the label on the bottle, appears to have formed part of the original collection of Sir Hans Sloane, in honour of whom I have now named it.

13. *Lith. pilicornis* (TAB. XXXIII. fig. 34.), ferrugineus, capite cordato; subsegmento antennali lævi, antennis pedibusque elongatis pilosissimis, labio polito pilis raris punctisque obsolete: denticulis 10 e quibus 3 utrinque interiores subapproximatæ, ocellis utrinque 20-24, metatarsis ferrugineis.—Long. unc. $1\frac{2}{10}$.

Lith. pilicornis, *Newp. l. c.*

Hab. In Angliâ. (*v. in Mus. Brit.*)

This species is very much like *L. Sloanei*, of which at first I suspected it was only a variety: But it differs from that species in having the head cordate and polished, with the posterior margin thickened, the antennæ and body more hairy, the labium hairy, with *ten teeth*; and also in its smaller size. In the form of the labium and number of the teeth it very much resembles *L. Americanus*, but differs from that species also in having the labium hairy.

14. *Lith. Argus*, ferrugineus, capite parvo subconvexo, antennis pilosis, ocellis parvis brunneis utrinque 28-30, labio angustato emarginato polito: denticulis 10 nigris.—Long. unc. $\frac{9}{10}$.

Hab. In Novâ Zelandiâ, prope Wellington. (*v. in Mus. D. Hope.*)

The general appearance of this species is that of *L. forficatus*, but it is somewhat smaller; while the numerous ocelli mark it as quite distinct. It is interesting as showing the existence of true *Lithobii* in New Zealand. It was taken by Dr. Stephenson.

15. *Lith. brevicornis*, ferrugineo-marmoratus infra posticè pedibusque pilosissimus, antennis pilosis 41-articulatis vix dimidium corporis æquantibus, ocellis parvis æqualibus utrinque 20, labio polito punctis sparsis obsolete: denticulis 12.—Long. $\frac{7}{10}$ unc.

Lith. Vesuvianus, *Costa, Mem. Zool.* i. p. 60. f. 7?

Hab. Prope Neapolin. (v. in *Mus. D. Hope.*)

This species might at first be regarded as the young of *L. fasciatus*, which it resembles in its general appearance. But it differs from that species in having a greater number of ocelli, and much fewer labial teeth, and in the deep emargination of the labium. The joints of the legs are short and thick, and the metatarsi are ferruginous and very hairy. The hairiness of the posterior segments and legs is a mark that the specimen has scarcely attained its adult size, although its close approach to maturity seems to be shown in the number of ocelli, and of joints to the antennæ.

I have named this species with doubt, because I am unable to ascertain whether it may not be the species named, but not yet described, by Signor Achille Costa as *Lithobius Vesuvianus*, and of which only a very imperfect delineation has been given. Signor Costa's specimen was a young and immature one.

16. *Lith. castaneus*, saturatè castaneus, antennis pedibusque pilosis, ocellis utrinque 14, labio convexo subovato transverso; laminis dentalibus rectis angustissimis singulâ denticulis tribus minutis acutis nigris, scutis dorsalibus alternis posticè in margine incrassatis impressioneque longitudinali utrinque anticè transversèque productâ.—Long. lin. 9.

Lith. castaneus, *Newp. l. c.* p. 96.

Hab. In Siciliâ. (v. in *Mus. Brit.*)

Head, labium and dorsal surface of the body dark chestnut. Frontal segment elongate, quadrate, a little narrowed anteriorly. Antennal subsegment very distinct, slightly pilose; posterior surface of the head with two slight longitudinal impressions. Ocelli fourteen on each side. Antennæ with forty-one joints, very hairy, basilar joint longer than the second. Labium convex, subovate, transverse, with only a very slight longitudinal sulcus; dental plates very narrow, small and transverse, with six acute black teeth. The first, third, fifth, seventh, eighth, tenth, twelfth and fourteenth dorsal plates with

the posterior margin greatly thickened; each plate with two lunate deep impressions close to the margin, and extended across the segment. Legs very hairy, with the thighs large and strongly spined. Posterior pair of legs very strong.

17. *Lith. nudicornis*, Gerv. in Ann. Sci. Nat. Janv. 1837, p. 49. Lucas, Hist. Nat. Anim. Art. iv. p. 543. (1840.)

18. *Lith. melanops*, virescenti-flavus, capite aurantiaco, ocellis magnis nigris utrinque 12, subsegmento antennali basi transversè nigrescenti-fasciato, denticulis labialibus 6 acutis.
—Long. $\frac{6}{10}$ unc.

Hab. In Angliâ, prope Sandwich in Com. Cantiano. (*v. in Mus. Brit. nostroque.*)

Head orange-coloured; the eyes, sides and front with a blackish fascia; eyes large. Antennæ with forty joints, hairy, yellow. Mandibles and labium bright yellow. Metatarsal joint hairy, orange. Femoral and tibial articulations with short spines.

This is the smallest of the British species. It was taken by myself at Sandwich, during a continuance of dry weather, under moist stones in a garden, in the month of September 1842, but I have not met with it since, and it appears to be rare. I possess four specimens. It is very distinct from other species, especially in regard to the excavations in the coxæ, which, instead of being simply transversely furrowed, have each four oval, cup-shaped bodies within them. The largest of the species does not exceed six-tenths of an inch in length.

19. *Lith. platypus*, pedum paribus 4 posterioribus latis incrassatis.?
Lith. ———, *Savigny*, *Icon. Descr. Egypte, Ins. Myriap.* fig. 3.

The above character is derived from an inspection of Savigny's figure in the great work on Egypt; but as no description of the plates has yet been published, I have given the character with a query. M. Gervais* very justly remarks, that the specimen figured was immature, as is shown in the small number of ocelli and of joints to the antennæ, there being only four ocelli on each side, and twenty joints to each antenna. But notwithstanding this, Savigny appears to have delineated a distinct species, if the figure he has given is correct, and I see no reason to doubt it. I am not acquainted with any other *Lithobius* that exhibits, in any stage of growth, that peculiar form of the legs which characterizes Savigny's species.

* Annales des Sci. Nat. Jan. 1837, p. 49.

Genus 3. HENICOPS*, *Newp.*

Caput latum, depressum, ocello magno utrinque unico. Labium lamelliforme.

1. *Hen. maculata* (TAB. XXXIII. fig. 37; TAB. XL. fig. 3.), capite cordato; subsegmento antennali subemarginato, antennis pubescentibus, labio complanato angulis rotundatis: denticulis 6 acutis paulùm elongatis, mandibulis labioque lætè aurantiacis, superficie dorsali serie utriusque macularum aurantiacarum, ventrali pallidè flavâ, pedibus cinerascensibus; pari postremo elongato.—Long. lin. 5. v. 6.

Hab. In Tasmaniâ. (v. in *Mus. D. Westwood.*)

This is one of the smallest known species of *Lithobiidæ*; and it is interesting to observe, that while it forms the type of a generic division, distinguished by the organ of vision being only a single ocellus on each side of the head, it exactly coincides with the true *Lithobiidæ* in the form of the head, dorsal plates, legs, and armature of the labium. In these respects it is exceedingly interesting, as proving that the true characters of this family, although hitherto almost entirely overlooked by naturalists, are as distinct in the species of the southern hemisphere as in those of our own climate. This species is the first of the *Lithobiidæ* hitherto received from Van Diemen's Land; it was obligingly lent to me by J. O. Westwood, Esq., who has also furnished me with references to some of the published tracts on the *Myriapoda*.

2. *Hen. emarginata*, ferruginea, pedibus flavescentibus, capite magno quadrato-ovato, lami- nis dentalibus distinctis transversis edentulis singulâ tamen emarginaturis 3 inconspicuis, scutis dorsalibus margine elevatis.—Long. $\frac{1}{2}$ unc.

Lithobius emarginatus, *Newp. Ann. & Mag. Nat. Hist.* xiii. p. 96.

Hab. In Novâ Zelandiâ. (v. in *Mus. Brit.*)

This specimen is exceedingly interesting, as proving the existence of both genera of *Lithobiidæ* in New Zealand. It was brought to England in the collection of insects obtained by Captain Sir James C. Ross during his voyage to the Antarctic regions, and is ticketed in the collection as "found in the ground." The specimen however is a young individual, but sufficiently matured to afford a positive specific character in the emargination of the dental plates.

* Ἐνικὸς, *single*; and ὠψ, *the eye*.

Family 3. SCOLOPENDRELLIDÆ, *mihi*.

Additional Remarks.—Read March 4th, 1845.

[Since the publication of the *Synopsis Generum* of *Myriapoda*, in the last part of the Society's Transactions, I have found it necessary, on a closer examination of M. Gervais' genus *Scolopendrella*, to alter the place assigned to it in the arrangement of the class, and to make it the type of a distinct family. In the *Synopsis Generum*, and also in the systematic description of the species, read to the Society in March last, I had connected this genus with the *Geophili*, and regarded it as a subfamily, *Scolopendrellinæ*; and had included in the genus a new species by the name of *Scolopendrella immaculata*. The connecting of this genus with the *Geophilidæ* was in deference to the views of M. Gervais, who discovered the type, and who seems to have regarded the short alternating segments of the body, and the existence of anal styles, as the connecting affinities. But on more closely examining the characters of *Scolopendrella*, as given by M. Gervais, and comparing them with those of my new species, I find that they indicate a much higher type of development than the *Geophilidæ*, and very nearly approach the *Lithobiidæ*. One of the most marked indications of this affinity is in the very short, basilar segment of the head, which in the new species, *S. immaculata*, not only gives attachment to the mandibles, as in *Lithobius*, but also to a diminutive pair of legs, as in *Scolopendra*. These legs, attached to the basilar segment, have entirely disappeared in the *Lithobiidæ*. In other very marked characters, as in the number and alternation of long and short segments to the body, and the imbrication, elongation of the angles, and excavation of the posterior margin of the dorsal plates, the *Scolopendrellidæ* approach very closely to the *Lithobiidæ*, in which these latter characters are seldom or ever wanting; but they are never found in any of the *Geophilidæ*.

I propose therefore to establish the *Scolopendrellidæ* as a separate family, and to place them next after the *Lithobiidæ*. This view of the position which the *Scolopendrellidæ* ought to occupy in the arrangement of the class is supported by their mode of development and growth, which is very similar to that of *Lithobius*. Thus I have obtained some specimens of the species discovered by myself in the neighbourhood of London, with only twelve joints to the antennæ,

and nine pairs of legs; others with ten pairs of legs, and nineteen joints to the antennæ; and others, still larger, with eleven pairs of legs, and more than twenty joints to the antennæ; while those which appeared to be adult specimens had twelve pairs of legs, and twenty-eight joints to the antennæ. These facts show, that in their mode of development they resemble the *Lithobiidæ*, which acquire their adult number of legs and segments by a succession of developments, which in the *Geophilidæ* take place only to a very limited extent.

The soil preferred by the *Scolopendrellidæ* is a moist light mould at the roots of grass. These little animals, like their congeners the *Lithobii*, shun the light, and run with great celerity, from which I am inclined to regard them as of carnivorous habits, preying, perhaps, on the microscopic *Poduridæ* found in the same places. The periods at which I have captured them are the spring and summer months. The perfect full-sized specimens are found in May, while the smaller ones are most abundant in June and July.

Familia 3. SCOLOPENDRELLIDÆ.

Corpus pedesque breves, appendicibus styliformibus. *Segmenta* inæqualia; scutis dorsalibus imbricatis. *Antennæ* elongatæ, articulis ultra 16.

Genus 4. SCOLOPENDRELLA, Gervais.

Antennæ moniliformes, pilosæ. *Corpus* e segmentis 14. *Pedum* paria 12. *Caput* depressum; segmento basilari brevissimo.

1. *Scolopendrella notacantha*, alba, scutorum dorsalium angulis posticis elongatis spinescentibus.—Long. lin. $1\frac{1}{2}$.

Scolopendrella notacantha, Gerv. in *Rev. Zool.* 1839, p. 279.

Hab. Prope Parisios, in hortis.

2. *Scolopendrella immaculata* (TAB. XL. fig. 4. a, b, c), alba immaculata, stylis analibus triangularibus acutis.—Long. lin. $1\frac{1}{4}$.

Hab. Prope Londinum, ad St. John's Wood.]

Family 4. SCOLOPENDRIDÆ.

The *Scolopendridæ* differ from the *Lithobiidæ* and *Scolopendrellidæ* in possessing twenty-one pairs of legs and twenty segments to the body, besides the two segments which constitute the head.

The anterior or cephalic segment (TAB. XXXIII. fig. 4. A) is small, heart-

shaped, and narrowed anteriorly, with its posterior margin thin and rounded, or straight and abbreviated. The antennæ are tapering, with from seventeen to twenty slightly elongated, subconical joints. The basilar segment (B) bears the large mandibles, and also the first pair of legs, which are atrophied and palpiform. The segments of the body are alternately longer and shorter on the dorsal surface, but nearly equal on the ventral; and there are usually nine, but in some genera ten pairs of spiracles at the sides (*a, b*). The posterior pair of legs are elongated, and their basilar or femoral joints are in general armed with strong spines.

The generic characters of the family are derived in part from the number of legs and spiracles, and joints in the antennæ, and from the organs of vision. The latter consist of four stemmata on each side (TAB. XXXIII. fig. 35.) in *Scolopendra*, *Heterostoma*, *Cormocephalus* and *Scolopendropsis*, but in *Cryptops* they are either entirely absent, or consist but of a single ocellus concealed beneath the under surface of the head (24*).

The structural characters of species are derived from the denticulations of the labium (fig. 5†.) and from the number, arrangement and shape of the spines, and the form of the femoral joints of the posterior pair of legs (TAB. XXXIII. fig. 22. s. and TAB. XL. fig. 5. to 10.). Professor Brandt has correctly remarked, that the shape and armature of the posterior legs usually afford good characters, as the peculiarities of these parts are as constant in the young as in adult specimens. This is always the case, except in those instances in which the limbs have been reproduced, and then very frequently some of the spines are absent; while in other instances of reproduction the spines are smaller and more numerous than in the original limbs. The similarity of the structural characters in the young and adult individuals arises from the circumstance that the *Chilopoda* acquire the whole of their segments, legs, ocelli, and joints to the antennæ, before they have attained even one-third of their adult size; so that, although they continue to undergo repeated changes of tegument, they then merely increase in bulk and length at each change. The number of joints to the antennæ may be employed in the division of the *Scolopendræ* into sections, which hereafter, perhaps, may be found sufficiently uniform to constitute separate genera. But this character is of no use in the identification of species. Thus an elongated form of the posterior pair of legs, armed with three spines

on the superior internal surface of each femur, with two spines in a longitudinal series on the inferior surface, and eighteen joints to the antennæ, are common to several distinct species, of which *S. subspinipes*, Leach, is the type. A like number of joints to the antennæ and spines on the superior margin of the femur, and an entire absence of spines on the under surface indicate another division; while twenty joints to the antennæ, a club-shaped, angulated form of the posterior pair of legs, and three longitudinal series of spinulæ on the under surface of the femur, are characters that distinguish a third subdivision, of which the true *L. morsitans*, Linn. is the type.

The colour and markings of the body in recent specimens are of great assistance in the identification of species, when taken together with structural characters, although they cannot alone be depended on, especially in the examination of those which have been long preserved in spirit. Each family of the *Chilopoda* is distinguished by some general peculiarity of colour or of markings on the body that is common to nearly the whole of the species of that group. Thus the *Cermatiidæ* have longitudinal bands of colour on the dorsal surface, and almost invariably annulations on the legs; the *Lithobiidæ* are nearly all of a brown or ferruginous hue; while in the *Scolopendridæ* a yellow or a ferruginous colour of body, with transverse bands of dark green or blue on the margins of the segments, is exceedingly common, more especially in tropical species, and longitudinal bands of colour are rare.

The habits of the *Scolopendridæ* are decidedly carnivorous, and their bite is venomous; but although quickly fatal to insects and small invertebrata, the injury it occasions to those who suffer from its effects in warm climates is exceedingly various, and seems to depend much on the state of health and constitution of the sufferer and his susceptibility to disease. But added to this explanation I would suggest, that the virulence of the poison of the centipede, and the degree of injury inflicted by it, may depend much on the circumstance as to whether the animal has recently bitten and expended its venom on some other object; in which case the injury occasioned by all poisonous animals is undoubtedly less severe. The diminished virulence of the poison may be satisfactorily accounted for by what we now know of the manner in which the secretions of all glands are elaborated*, by the growth, bursting and diffuence of

* Trans. Roy. Soc. Edinburgh, 1842.

successive series of epithelial cells that line the interior of those organs, the fluid contained within, and into which these cells and their nucleoli are resolved, being the proper secretion. When this is expended too frequently, and the organ in consequence is excited by what we may regard as the stimulus of want, the secreting epithelial cells are hastened in their development, and the fluid into which they are resolved is imperfectly elaborated, and its properties, doubtless, are less active. The gland by which the poison of the centipede is secreted has not hitherto been described. Leeuwenhoek discovered at the apex of the mandibles an orifice that communicated internally with an elongated cavity, and he also saw a drop of fluid exude from the orifice, but he does not appear to have discovered the true secreting gland. Although I do not now intend to enter on an examination of the internal organs of *Myriapoda*, I may here briefly state that I have been somewhat more fortunate in this respect, and not only have confirmed Leeuwenhoek's observation in regard to the existence of a longitudinal opening at the inner margin of the apex of the mandible, but also have traced backwards a sac with which it communicates, and have discovered the gland of which this sac is the reservoir or efferential cavity. The gland itself extends backwards from its junction with the sac at the articulation of the claw and atrophied tarsal and tibial joints to their articulation with the femoral portion of the mandible, of which it occupies the whole length, situated almost close to the external surface beneath the tegument, abundantly supplied with vessels and nerves.

Familia 4. SCOLOPENDRIDÆ.

Segmenta podophora 21 vel 23. *Pedes* posteriores incrassati; articulo primo vel secundo spinoso. *Antennæ* subulatæ, 17-20-articulatæ.

Subfamilia 1. SCOLOPENDRINÆ.

GENUS 5. SCOLOPENDRA.

Segmentum cephalicum cordatum, imbricatum. *Oculi* stemmatosi, utrinque 4. *Antennæ* attenuatæ, 18-20-articulatæ. *Spiracula* valvularia, in paribus 9. *Pedum* paria 21.

Divisio 1. *Parvidentatæ*.

Dentes labiales numerosi minimi, uniformes, coadunati.

Sectio A.

Pedum paris postremi articulo basali complanato, brevi, crasso; spinis in superficie inferiore numerosis, in seriebus longitudinalibus tribus dispositis. Antennæ plerumque 20-articulatæ.

1. *Scol. angulipes*, testacea, capite pedibusque postremis ferrugineis, his brevissimis crassis; articulo basali triangulari complanato marginibus subelevatis: margine interiore spinulis 6 superficieque internâ spinulâ unicâ.—Long. unc. $4\frac{1}{2}$.

Scol. angulipes, *Newp. l. c.* p. 97. sp. 10.

Hab. In Insulâ Madagascar. (*v. in Mus. Brit.*)

Cephalic segment small, cordate; basilar segment and body yellowish, with the labium and mandibles ferruginous: labial sutures distinct; dental plates lozenge-shaped; teeth eight, small and distinct, but obtuse, with the margin arched. Mandibular tooth large; posterior pair of legs very thick, short, with the joints triangular. Superior surface of the basilar joint flat, with acute, slightly elevated margins; the internal one with six minute spines, the four anterior of which are very small, and arranged in two series, closely approximated; the fifth intermediate between these and the sixth or apical one, which is very large and quadrifid at the apex; internal surface flat, with a single tooth near the inferior border; inferior surface rounded, with nine teeth arranged in three alternating longitudinal series, three in each series, as in *S. morsitans*. Second joint with the superior surface somewhat convex in the middle, with the margins free and elevated, inclosing an elongated oval space. Lateral anal appendages small, obtuse, with the apex multifid. Preanal scale four-sided, short, cordate, with the posterior margin rounded.

This species is distinctly allied to *S. morsitans*, Linn., and might at first sight be mistaken for it, but it differs in the legs being shorter and thicker, and more triangular, in the form of the dental plates, and in the colour of the head, posterior legs and body.

2. *Scol. morsitans*, viridi-flavescens, segmentis plerumque marginatis, dentibus 8 brevibus obtusis; margine dentali rotundato, pedum paris postremi articulis femorali tibialique marginibus supernè liberis elevatis; femoralis superficie interiore spinulis 5 v. 6 nigris quarum posteriore apicalive magnâ quadrifidâ: inferiore spinulis 9 triseriatis alternantibus.—Long. unc. $2\frac{1}{2}$ —3.

Scol. morsitans, *Linn. Syst. Nat.*

Scol. marginata, *Say, in Journ. Acad. Nat. Sci. Phil.* 1821, p. 9. *et in Œuvr. Entom. ed. Gory*, livr. i. p. 22.

Scol. Brandtiana, *Gerv. in Ann. Sc. Nat.* Janv. 1837. *Lucas, Hist. Nat. Anim. Art.* tom. iv. p. 344.

Scol. platypus, *Brandt, l. c.* p. 61. *Newp. l. c.* p. 98.

Hab. In Insulis Caribæis. (*v. in Mus. Brit.*)

This species very closely resembles *S. cingulata* in its general appearance. The spinulæ on the inferior surface of the posterior legs are arranged in three series, which alternate with each other, so that, as remarked by M. Brandt, who first correctly described this species, they form with each other a succession of triangles. The preanal scale is very short, somewhat quadrate, with the posterior margin very slightly rounded. The lateral appendages also are short, with a slightly produced apex, bifid.

This appears to be a very common species of the West India islands, and perhaps also of the whole of tropical America, and most certainly is the *Scolopendra platypus* of Brandt, whose specimens were obtained from Jamaica and Havannah. It is the one to which Linnæus gave the name *morsitans*, but confounded with a great variety of other species. There is no specimen of it now existing in the Linnean cabinet, but it is evidently the smallest of two species described by Brown in his 'History of Jamaica.' In a copy of Brown's work, now in the library of the Linnean Society, and formerly belonging to Linnæus, there is Linnæus's autograph name "*Scolopendra morsitans*" on the margin of the page, opposite to Brown's description, "*Scolopendra l. pedibus quadriginta*;" and Linnæus refers to Brown's work in his copy of the 'Systema Naturæ,' now also in the library of the Linnean Society.

In naming the species *S. morsitans*, Linnæus probably had in view the following observations of Brown on this species:—

"This insect is reckoned very venomous; the prongs of the forceps are very strong, bending and pointed, which enable them to bite very hard, and they probably emit some venomous juice also. Some who have been bit by them informed me that the parts are very painful for two or three hours, and turn frequently of a livid colour. I have seen them often kill a cockroach with a single nip."

Var.? α . Dentibus labialibus 10 distinctis nigris; margine dentali arcuato.

Hab. In Demerarâ. (*v. in Mus. Brit.*)

Var.? β . Dentibus labialibus 10 subacutis.

Hab. In China? (*v. in Mus. Brit.*)

Var.? γ. ———?

Hab. Tobago. (v. in Mus. Brit.)

Obs.—I have considerable doubt whether these are identical with the Jamaica species, which can only be ascertained by comparison with recent specimens.

3. *Scol. limbata*, De Haan. Brandt, l. c. p. 61. sp. 7.

4. *Scol. varia*, virescens, capite lætè flavo, segmentorum marginibus viridibus, margine labiali rotundato: dentibus 10 minutis, pedibus postremis complanatis haud marginatis angulo interno elongato quadrifido.—Long. unc. 5.

Hab. ———? (in Mus. Soc. Zool.)

This species greatly resembles *S. morsitans*, but differs from it in the posterior legs being more slender and without elevated margins. It is also much larger. The cephalic segment is small, and the basilar rather large. The posterior legs are flattened on their upper surface, with the external border subacute, the internal with two spines, the four anterior in two subapproximated pairs, with the fifth elongated and quadrifid. The inferior surface of the basilar joint convex, with nine spines in alternating series, as in *S. morsitans*. Preanal scale cordate, with the margin rounded. Lateral appendages very short.

5. *Scol. platypoides*, flava, segmentorum marginibus viridibus, capite antennisque rufis, pedibus postremis brevibus crassis; articulis basali secundoque marginibus elevatis: margine interiore spinulis 6 uti in *Scol. morsitans* seriatis.—Long. unc. 4.

Scol. platypoides, Newp. l. c. p. 97. sp. 14.

Hab. In Brasiliâ. (v. in Mus. Brit. et D. Miers.)

Cephalic segment quadrate cordate; antennæ red; basilar segment large, transverse; mandibular tooth large; labium smooth, flat, without sutures; dental plates short, transverse, quadrate, with the anterior margin rounded; teeth eight, short, obtuse, distinct. Posterior pair of legs short, with the basilar and second joints equal; flat on the superior surface, with the internal margin acute, with six spinulæ, the four posterior of which are approximated in double series; external margin slightly rounded, with a slightly elevated border; inferior surface rounded, with nine small spines arranged in three longitudinal irregular series. Lateral anal appendages very short, obtuse, with the apex bifid. Preanal scale flat, with an impressed longitudinal line; posterior border rounded.

This is very like *S. morsitans*; but it has an orange-coloured head and red antennæ like *S. varia* and *S. erythrocephala*, characters which I have not

observed in any individuals of *S. morsitans*. I have examined specimens, both young and adult, collected by Mr. Miers himself in Brazil, which have removed all doubts on the subject of its distinctness as a species.

6. *Scol. bilineata*, De Haan. Brandt, *l. c.* p. 64.

Hab. In Insulâ Java.

7. *Scol. erythrocephala*, Brandt, *l. c.* p. 63. sp. 10. *Newp. l. c.* p. 97.

Hab. In Insulâ Java.

8. *Scol. tigrina*, flava, capite antennis segmento basilari pedibusque postremis rufis, segmentorum margine posteriore saturatè viridi, pedibus postremis brevibus crassis subconvexis; articuli basalis margine exteriore elevato: interno spinis 5 nigris in seriebus alternantibus dispositis.—Long. unc. 5.

Hab. In Indiâ Orientali, Sultanpore. (*v. in Mus. Brit. & "United Service."*)

Head subquadrate, cordate; antennæ 19-jointed, blackish at the tips; basilar segment large, transverse; mandibular tooth large; labium convex, smooth, with a longitudinal suture; dental plates short transverse, thickened; teeth eight, small, black, obtuse; posterior pair of legs moderate, first and second joints equal, rather thick, with the superior surface flattened, smooth, subconvex; external margin with a raised border; internal margin with five spines arranged in two alternating series, the posterior or angular spine large, with the apex quinquefid. Inferior surface rounded, with nine sharp black spinulæ arranged in three longitudinal series, three in each series, not one of which is parallel to the other. Lateral anal appendages short, deeply punctured, with the apical process bifid, and a very minute spinous tubercle at the posterior margin. Preanal scale short, subcordate, with the posterior margin rounded.

A specimen of this very beautiful species was brought alive from the north of India to the British Museum in a collection of fossil bones. It agrees very nearly with M. Brandt's description of *S. erythrocephala*, excepting that the legs of that species are olive-coloured and the back somewhat marbled, and it is very much smaller. I ought to remark, however, that all the specimens I have seen concur in having the legs yellow and the back without any marbling.

Var. ? a. Differs from the preceding in having 20 joints to the antennæ, of which the ten or twelve apical ones are black. The labial teeth ten, black, distinct; the posterior pair of legs much narrower, with a free elevated external and internal margin to the femoral, tibial and tarsal joints.—Length $3\frac{3}{4}$ inches.

It inhabits the Mysore. (In the cabinet of the Rev. F. W. Hope.)

The narrowness of the legs, with the free elevated margins of the joints, and the number of the teeth, induce me to regard this as distinct.

9. *Scol. Leachii*, virescens, pedibus postremis supernè complaiatis uti in *Scol. morsitante* angulatis marginatisque tamen gracilioribus; margine interiore spinis sex biseriatis $\frac{2}{4}$.—Long. unc. 3.

Scol. Leachii, *Newp. l. c.* p. 97.

Scol. morsitans, *Leach, Zool. Misc.* iii. sp. 1; *Donov. Ins. Ind.*

Hab. In Africâ Occidentali, Fantee et Ashantee, *Bowdich. (v. in Mus. Brit.)*

Cephalic segment cordate, small, smooth and flattened; basilar segment large, a little narrowed posteriorly; mandibles and tooth large; labium smooth, slightly depressed, sutures absent; dental plates short, transverse and thickened; teeth eight, small, obtuse; posterior segment of the body with a very distinct median dorsal ridge, as in *S. morsitans*. Posterior pair of legs slightly elongated; femoral and tibial joints equal; superior surface of the femoral joint flat, smooth, with the external margin subacute; internal margin compressed, with six teeth arranged in two alternating series; two in the superior and four in the inferior series, the fourth or angular one large, obtuse, and slightly bifid. Internal surface flattened, toothless; inferior surface rounded, with nine spines arranged in three longitudinal series, three in each series, those of the external and internal series parallel with each other; second joint flattened, with the margins elevated. Lateral anal appendages short, with the apex produced, simple; or slightly bifid. Preanal scale four-sided, somewhat cordate, with a longitudinal median line, and the posterior margin slightly rounded.

I have described this species from Dr. Leach's original specimen in the British Museum. It very much resembles the true Linnean *S. morsitans*, but is distinguished from it by the joints of the posterior pair of legs, which are longer and more slender. There is a ticket to the original specimen, with the name and word "Fantee," in Dr. Leach's hand-writing. These specimens, of which there are several, were brought from the western coast of Africa by the traveller Bowdich.

10.?
Scol. angusta, Lucas in *Hist. Nat. des Isles Canaries*, par MM. Webb et Berthelot, tom. ii. p. 49. (*v. in Mus. Brit.*)

I am doubtful whether this species is in reality distinct from *S. Leachii*, which it very closely resembles.

11. *Scol. formosa*, segmento cephalico cordato, mandibulis labioque rufis, segmentorum marginibus viridibus, pedibus aurantiacis, dentibus 10 distinctis nigris, pedum postremorum femoribus margine exteriore elevato: interiore spinis 5 nigris in seriebus 2 alternantibus: superficie inferiore rotundatâ spinis 6 in seriebus 3 longitudinalibus.—Long. unc. 4.

Hab. In Indiâ Orientali, Midnapore. (*v. in Mus. Brit.*)

12. *Scol. longicornis*, capite segmentis posterioribus pedibusque rufescentibus, corpore lætè olivaceo flavove marginibus viridibus, pedibus postremis gracilibus elongatis triangularibus; articulorum trium basialium superficie superiore complanatâ marginibus elevatis tenuissimis: margine interiore spinulis 6.—Long. unc. 3.

Scol. longicornis, *Newp. l. c.* p. 97.

Hab. In Novâ Hollandiâ Intertropicali, Port Essington, *Gilbert.* (*v. in Mus. Brit. et D. Hope.*)

Cephalic segment cordate, subquadrate, depressed at the sides; antennæ much elongated; basilar segment large; mandibular tooth large, with a small tubercle near the apex; labium with a triangular depression at its anterior part, sutures absent; dental plates transverse quadrate, with the anterior margin of each arched and a little dilated; teeth eight, very distinct, but obtuse. Posterior pair of legs elongated, triangular, with the upper surface of the first three joints flattened, with thin elevated borders. Internal margin of the basilar joint with six small spines arranged in two irregular subapproximated series; the posterior or angular spine large, elongated, and divided at its apex into six very minute ones: lateral and inferior surfaces of all the joints rounded, the basilar one with nine small spines, arranged in three slightly diverging, longitudinal, elevated series, three in each series, with a slight spoon-shaped excavation between the middle and internal series at the base; fourth and fifth joints narrow and cylindrical. Lateral anal appendages short, with the apex slightly elongated, quinquefid, with the posterior margin compressed, and a minute tubercle on its external surface near the base of the legs. Preanal scale quadrate, subcordate, with the margin straight.

This species bears a very close resemblance to *S. Leachii*, but is distinguished from it by the rounded terminal joints of the posterior legs, the tubercle on the anal appendages, the elongation of the antennæ, and the greater length of its body. It was captured at Port Essington in Australia, and I may here remark that a great similarity exists between many of the *Scolopendræ* of the north-western coast of Africa and those of the Australian continent.

13. *Scol. tuberculidens*, testacea, dente mandibulari magno basi tuberculo minimo acuto

armato, pedum paris postremi articulo basali angusto complanato 6-spinoso: spinâ angulari magnâ 5-fidâ.—Long. unc. 3.

Scol. tuberculidens, *Newp. l. c.* p. 97.

Hab. In Insulâ Ceylon. (*v. in Mus. Brit.*)

Cephalic segment cordate, depressed; basilar segment large; mandibular tooth with a very distinct tubercle at its base; labium smooth, with a triangular depression between the dental plates; dental plates quadrate, elongate, with the anterior margin rounded; teeth eight, distinct, but obtuse. Posterior pair of legs with the basilar joint narrow, equal, elongated, with the superior surface flattened and the external margin with a very slight elevated border; internal margin with five or six minute slightly hooked spines, the four anterior of which are sub-approximated, and arranged in two parallel series; angular spine large, quinquefid. Internal and inferior surfaces rounded, with nine spines arranged in three slightly diverging alternating longitudinal series, three in each series, the posterior spine of the internal series on the internal surface. Second joint elongated, flattened and slightly margined. Lateral anal appendages obtuse, minutely punctured, with the apex pointed and bifid. Preanal scale cordate, quadrate, with the posterior margin straight.

This species also greatly resembles *S. Leachii*, but is quite distinct from it. The basilar joint of the posterior legs is much narrower than in that species, and the disposition of the spines on the under surface of the joint is different.

14. *Scol. Fabricii*, capite mandibulis labioque flavo-aurantiacis, corpore flavescenti-olivaceo, segmentorum marginibus posterioribus saturatè viridibus, dentibus 10, pedibus flavescentibus; pari postremo gracili elongato magnitudine æquali: superficie superiore complanatâ spinulis 5 alternantibus.—Long. unc. 2 $\frac{3}{4}$.

Scol. morsitans, *Fabr. Entom. Syst.* ii. p. 389. sp. 6; *Newp. l. c.* p. 97.

Hab. In Africâ. (*v. in Mus. Brit. et Banks.*)

Cephalic segment cordate, flattened; antennæ red, darker at the extremities; basilar segment moderate; mandibular tooth large; labium flat, narrower anteriorly, sutures absent; dental plates almost quadrate, with the margin rounded; teeth ten, short, obtuse. Posterior pair of legs with the basilar joint slender, with the superior surface flattened; the external margin acute and the internal one with five spines, the four posterior of which are arranged in two alternating series, not approximated; the apical one elongated, quadrifid; the inferior surface rounded, with nine spines in three series, three in each series, forming transversely three oblique rows, the distal spine of the internal series situated on the internal inferior border. Lateral anal appendages narrowed and

short, with the apex small and bifid. Preanal scale smooth, subcordate, with the margin rounded.

On examining the few specimens of this genus in the Banksian cabinet belonging to the Linnean Society, I found this species had been ticketed by Fabricius himself as the *S. morsitans* of Linnæus. But I have not a doubt that both Fabricius and Linnæus included several species of nearly the same size under the common name of *S. morsitans*. Linnæus, in his own copy of the 'Systema Naturæ,' edit. 1766, refers to descriptions of species in numerous works, which prove this to have been the case. Thus, amongst others, he refers to Brown's 'Jamaica' and Catesby's 'Carolina,' and he says of *S. morsitans*, "Habitat in Indiis," and in his 'Systema Naturæ' he has also written against it, "Cap. B. Spei." This sufficiently proves that several species have been confounded under one name, and also that the species named by Fabricius in the Banksian cabinet was one of those which Linnæus erroneously regarded as identical with the true *S. morsitans*. I was not aware of these circumstances at the time of publishing in the 'Annals and Magazine of Natural History' my description of species in the British Museum cabinets, and on the authority of the Fabrician species in the Banksian cabinet, I then erroneously attached the name of *S. morsitans* to this African species.

15. *Scol. Richardsonii*, capite corporeque dilutè olivaceis, antennis segmentorumque marginibus saturatè viridibus, mandibulis labioque aurantiacis, dentibus 8 parvis obtusis, pedum postremorum articulo femorali margine superiore biseriatim 6-spinoso: inferiore 9-10-spinoso.—Long. unc. $2\frac{1}{2}$.

Hab. In Novâ Hollandiâ, prope Sydney. (*v. in Mus. Brit.*)

The head and body of this species are light olive, with the antennæ 20-jointed, dark green; legs yellow, with the metatarsi green; margins of the segments dark green. The dental plates are small, slightly elongated, quadrate, with eight small obtuse teeth. The posterior pair of legs are narrow, flattened, and without distinct margins; the femoral and tibial joints of equal length, with six spinulæ on the superior internal border of the femur arranged in two alternating series, four in the upper and two in the lower, the apical one elongated and trifid. The inferior surface of the joint rounded, with from nine to eleven spinulæ, in three elevated series. Lateral anal appendages slightly elongated, quinquefid. Preanal scale short, subquadrate, with the posterior border straight.

16. *Scol. spinigera*, brunnea, capite labioque ferrugineis, pedibus paris postremi gracilibus complanatis subæquè crassis; margine superiore interiore superficieque interiore spinarum acutarum seriebus 2 longitudinalibus armatis.—Long. unc. $1\frac{3}{4}$.

Scol. spinigera, *Newp. l. c.* p. 98.

Hab. Prope Tripoli Africæ Borealis, *Ritchie. (v. in Mus. Brit.)*

Cephalic segment subcordate, with the posterior margin straight; antennæ with nineteen joints; basilar tooth large; labium smooth, convex, sutures absent; dental plates small, quadrate; teeth eight, acute, pointed, with the second and fourth on each plate irregular. Posterior pair of legs elongated, flattened, and a little dilated; basilar joint with the external margin subacute; internal one with numerous acute spines, arranged in two, and sometimes three, short, oblique, double series, from three to five in each series; internal angular process large, elongated, with the apex multifid. Inferior surface slightly flattened, with from fifteen to twenty very minute spines arranged in two double, irregular, longitudinal series. Lateral anal appendages roughened, convex, with the apex elongated and quinquefid, with one minute spine on its external surface, and one on its external posterior margin. Preanal scale flat, four-sided, slightly elongated, with the posterior margin rounded.

17. *Scol. affinis*, viridi-fusca, capite labio mandibulisque ferrugineis, pedibus viridibus, pedum posteriorum articulo basali infernè paulùm excavato: spinis minutissimis triseriatis, dentibus 8 e quibus in unaquâque laminâ dentali exteriore interioreque elongatis.—Long. unc. $1\frac{1}{2}$.

Scol. affinis, *Newp. l. c.* p. 98.

Hab. In Græciâ. *D. C. Fellows. (v. in Mus. Brit.)*

Cephalic segment cordate, subquadrate, with the posterior margin somewhat transverse; mandibular tooth large; labium smooth, sutures absent; dental plates quadrate; teeth eight, the external and internal one of each plate projecting, with a slight excavation between them; basilar joint of the posterior pair of legs flattened, with the margins rounded; internal margin armed with numerous spines, as in *S. spinigera*. Inferior surface slightly excavated, with at least three rows of very minute spines, amounting to from fifteen to twenty-five on each side of the excavation. Lateral anal appendages scabrous, with the apex elongated, multifid, and the external margin with three or four minute spines. Preanal scale smooth, elongate, quadrate, with the posterior margin rounded.

18. *Scol. punctiventris*, fusco-olivacea, antennis viridibus, mandibulis labioque aurantiacis, pedibus flavis, dentibus 8 distinctis: margine angustato, appendicibus analibus dense

profundèque punctulatis, pedibus postremis brevibus olivaceis; articulo basali spinis 4 marginalibus 6que inferioribus triseriatis 2, 2, 2.—Long. unc. $1\frac{3}{4}$.

Scol. punctiventris, *Newp. l. c.* p. 100.

Hab. In Floridâ Americæ Borealis. (*v. in Mus. Brit.*)

Cephalic segment slightly elongated, depressed, subovate; antennæ short; basilar segment rather large; labium flattened, elongated, narrowed anteriorly, without sutures; dental plates narrowed, elongated, subquadrate, with the border slightly rounded; teeth eight, the internal ones elongated. Lateral anal appendages deeply punctured, narrowed, with the apex acute and slightly recurved. Preanal scale subquadrate, with the border subemarginated. Posterior legs very short; basilar joint slightly elongated, with the upper surface subconvex; the internal margin with four spines, arranged in two alternating series; the three anterior spines minute; the apical one large, thick and acute. Inferior surface of the joint rounded, with six spines arranged in three longitudinal binary series, those of the external and internal parallel with each other.

This specimen was brought from Florida by E. Doubleday, Esq., F.L.S.

19. *Scol. Algerina*, capite antennis corpore pedibus postremis squamâque præanali olivaceis, pedibus appendicibusque analibus lateralibus aurantiacis, pedibus postremis brevibus complanatis: spinis 4 marginalibus.—Long. unc. $2\frac{1}{4}$.

Hab. In Algeriâ. (*v. in Mus. D. Hope.*)

Frontal segment of the head cordate, basilar segment large; labium smooth, sutures indistinct; dental plates small, transverse; teeth eight, small, almost obsolete; mandibular tooth large. Body rather wide: first and second joint of the posterior pair of legs short and broad, with the superior surface flattened; basilar joint with the external margin a little elevated; internal margin with four minute spines; internal surface flattened, without spines; inferior surface rounded, with nine spines arranged in three slightly diverging longitudinal series. Lateral anal appendages short, with two minute tubercles: preanal scale quadrate, narrowed posteriorly, with the posterior margin straight.

Sectio B.

Pedum pari postremo seric longitudinali unicâ spinarum (2 v. 3) armato, vel lævi nudo.

(a.) Antennæ 19- v. 20-articulatæ; pedes breves, crassi, angulati.

20. *Scol. cingulata*, sordidè lutea, segmentis viridi-marginatis, dentibus labialibus 10 nigris distinctis, antennis (?) 18-articulatis, pedum pari postremo mediocri valido subcomplanato marginibus rotundatis; margine interiori spinulis 5 nigris; spinâ apicali elongatâ bifidâ.—Long. unc. 3.

Scol. cingulata, Latr. in Cuv. Règne Anim. edit. 2. vi. p. 339. Brandt, l. c. p. 57. sp. 1.
Newp. l. c. p. 97.

Scol. morsitans, Gerv. l. c. sp. 3. Kutorga, *Scol. mors. Anat.* (Petrop. 1834.) tab. 3. p. 1.
Lucas, l. c. p. 544. sp. 3. pl. 3. f. 4. (sine synonym.)

Scol. Italica, Koch, *Deutschl. Crust. Myriap.* fasc. 9. tab. 1.

Hab. In Siciliâ. (v. in Mus. Brit. et D. Hope.)

The description given by M. Brandt of *S. cingulata* very correctly agrees with a specimen of this Myriapod from Sicily in Mr. Hope's collection, and with others from Asia Minor in that of the British Museum. It agrees also, in the number of joints to the antennæ, with the *S. morsitans* of M. Gervais. But as it is doubtful whether other specimens from Corfu, and a species from Egypt, figured by Savigny, are distinct, although closely resembling *S. cingulata*, I have determined to retain them apart from it at present, but with some expression of doubt.

21.? *Scol. cingulatoides*, flava, capite labio pedibusque postremis aurantiacis, dentibus 8 nigris obtusis, pedum paris postremi articulo basali crasso brevi complanato marginibus subelevatis uti in *Scol. cingulatâ* spinulis armato.—Long. unc. 3.

Scol. cingulatoides, Newp. in *Ann. & Mag. Nat. Hist.* 1844. p. 96.

Scol. fulva, Gerv. l. c. sp. 2?

Hab. In Insulâ Corcyrà. (v. in Mus. Brit.)

This species varies from the true *S. cingulata* in the usual number of joints to the antennæ, of which there are nineteen in each of five specimens in the Museum collection, and also in the number of teeth and the margins of the posterior legs.

22. *Scol. audax*, Gerv. in *Ann. Sci. Nat.* Janv. 1837. sp. 4.

I am unacquainted with this species, but from the description given of it I presume it to be distinct.

23. *Scol. Savignii*, capite corpore antennis pedumque pari postremo olivaceis, mandibulis labio appendicibusque analibus lateralibus brevibus punctatis ferrugineis, pedibus flavescens.—Long. unc. $3\frac{1}{2}$.

Scolopendra, Savigny, *Egypte, Myriap.* f. 1.

Hab. In Egypto. (v. in Mus. Brit.)

This species closely resembles *S. cingulata*, but is quite distinct from it in

colour, and also in the structure of the posterior pair of legs, and in the greater length of the antennæ, which have twenty articulations.

The posterior legs are convex on the upper surface with the margins rounded, and the spinulæ arranged almost as in *S. cingulata*.

24. *Scol. Hispanica*, lætè olivacea, segmentorum marginibus posticis saturatè cæruleis, superficie ventrali mandibulis labio pedibusque aurantiacis, pari postremo viridi; articulo basali infrà spinulis tribus acutis, dentibus labialibus 10 nigris obtusis.—Long. unc. $3\frac{3}{4}$.

Hab. In Hispaniâ australiore. (v. in *Mus. Brit.*)

This species resembles *S. cingulata*, but is quite distinct from it. The head is smaller, antennæ shorter, and posterior legs more convex. The cephalic segment is small, convex, subcordate; labium smooth, flattened, narrowed; dental plates subquadrate, very distinct, with the margin rounded; teeth distinct, ten, black; posterior pair of legs with the femoral and tibial joints equal, smooth, and somewhat flattened on the upper surface, with the external margin rounded; internal margin with five spinulæ, the four posterior ones arranged in two oblique series, two in each series, the apical one elongated, with the apex trifid. Inferior surface convex, with three spinulæ arranged in a single series.

There are two examples of this species in the Museum collection, in one of which the posterior legs appear to have been reproduced, as the spinulæ are irregular, smaller, and more numerous; this is a condition which reproduced limbs frequently exhibit.

(b.) Antennæ 18-articulatæ, articulis elongatis; pedum pari postremo gracili, articulo femorali infrà spinoso.

25. *Scol. subspinipes*, testacea (?), segmentorum margine posteriore viridi, pedum paris postremi articulo primo secundoque æqualibus subcomplanatis internè acutè trispinosis: spinâ secundâ infra apicalem.—Long. unc. 4.

Scol. subspinipes, *Leach in Trans. Linn. Soc.* xi. p. 383. *Id. in Zool. Misc.* iii. p. 41. *Id. in Enc. Brit. Suppl.* p. 440.

Hab. —? (v. in *Mus. Brit.*)

Head flattened, cordate, ovate; basilar segment large; labium convex, smooth; dental plates short, transverse, slightly convex, and punctured; teeth eight, short, obtuse, the internal one on each side bifid, mandibular tooth moderate. Lateral anal appendages (coxæ of the posterior pair of legs) short, ferruginous, punctured, with the apex trifid, and directed inwards. Preanal scale elongated, triangular, with the margin slightly rounded, and impressed with a longitudinal sulcus; superior surface of the femoral, or basi-

lar joint of the posterior pair of legs rather broad, flattened, with the external margin subacute; internal margin rounded, with three acute spines, the second one placed on the internal surface of the joint; inferior surface rounded, with two spines on the external side; second or tibial joint narrow, slender, of the same length as the femur.

There is only a single specimen of Dr. Leach's species in the Museum cabinets, and it is worthy of remark that most of the structural characters I have given are to a great extent common to several species which most certainly are distinct. I have been obliged, therefore, to seek a specific character in what appears to have been the original colour of Leach's species; this is a good guide in recent specimens, but it is difficult to ascertain with precision in dried ones; on this account I have given this part of the character with a slight doubt.

I must remark also that the right posterior leg of this specimen appears to have been a reproduced one, as the spines on the inferior surface are obsolete.

26. *Scol. Placeæ*, aurantiaca, tarsis scutorumque dorsalium margine posteriori saturatè viridibus, capite labio mandibulisque rubris, dentibus 10 minutis distinctis, squamâ præanali angustâ elongatâ margine rotundatâ, pedibus postremis gracilibus.—Long. unc. 5.

Hab. In Brasiliâ. (v. in *Mus. Brit. et D. Miers.*)

The cephalic segment of this species is subtriangular, cordate; labium convex, smooth; dental plates short, transverse, distant, with the margin rounded; teeth ten, distinct, but very small; legs with the metatarsal joints green, tarsal yellow, and claw black. Body elongated and elegantly formed. Posterior pair of legs elongated, with the superior surface of the basilar joint flattened, with three acute spines on the internal margin. Internal surface with two spines which form an oblique ascending series with the superior apical spine. Inferior surface rounded, with two spines; second joint slender, compressed. Preanal scale subtriangular, elongated, margin rounded. Lateral anal appendages with the apex elongated and acute.

This species resembles *S. subspinipes*.

27. *Scol. Gervaisii*, capite mandibulis labio appendicibusque analibus lateralibus saturatè rubris, segmentis ferrugineis marginatis, pedibus antennisque flavescens, laminis dentalibus rotundatis; dentibus conspicuis, pedum pari postremo elongato spinis tribus acutis quarum secundâ prope articulationem tibialcm.—Long. unc. $5\frac{1}{2}$.

Scol. subspinipes? *Gerv. in Ann. Sci. Nat. Janv. 1837. Brandt, Mem. Ins. Myriap. p. 59.*

Lucas, Hist. Nat. Anim. Art. t. iv. p. 544. sp. 5.

Hab. In Brasiliâ. (v. in *Mus. Brit.*)

This appears to be a very common species, but in the condition in which the *Myriapoda* are usually brought to Europe, its colours are easily overlooked, as they undergo much change in spirits. The most marked character of this species is the indistinctness of the labial teeth, which in some specimens are entirely absent. It differs also in the apex of the lateral anal appendages being more elongated and bifid.

28. *Scol. Ceylonensis*, saturatè castanea, articulis tarsalibus virescentibus, scutorum dorsallium lateribus distinctè marginatis, pedum pari postremo spinis ut in *Scol. subspinipede* armato.—Long. unc. 5.

Hab. In Ins. Ceylon. (*v. in Mus. Brit.*)

29. *Scol. planiceps*, capite parvo complanato cum labio mandibulis appendicibusque analibus cacainis, corpore olivaceo, segmentorum marginibus saturatè viridibus, dentibus 10 distinctis obtusis, pedibus postremis ferrugineis; femoribus subdilatis: margine interiore spinis 4 acutis alternatim biseriatis: superficie inferiore spinis 2 longitudinaliter dispositis.—Long. unc. 5.

Hab. In Insulâ Antiguâ Caribæarum. (*v. in Mus. Brit.*)

30. *Scol. septemspinosa*, capite antennis corpore pedumque pari postremo saturatè olivaceis, mandibulis labio corpore subtùs pedibusque saturatè ferrugineis; pedum pari postremo elongato gracili; spinis 3 uncinulatis in articuli basalis margine superiore interiore 2que in ejus superficie internâ inferiorique.—Long. unc. 4.

Scol. septemspinosa, *Brandt*, *l. c.* p. 60. sp. 4?

Hab. In Chinâ. (*v. in Mus. D. Hope.*)

Cephalic segment almost ovate, convex, smooth; mandibular tooth moderate; labium very smooth and convex, sutures absent; dental plates short, transverse, with the anterior margin straight; teeth ten, very minute, obtuse, and coalescing; posterior pair of legs elongated and elegantly formed; first and second joints of equal length, superior surface of the first subconvex, with the external margin subacute; internal margin with three slightly hooked teeth, the posterior one long, sharp, and simple; internal surface rounded, with two small teeth a little anterior to the first and second marginal ones; inferior surface rounded, with two strong spines arranged in a longitudinal series on the external inferior margin. Preanal scale elongate, quadrate, narrowed posteriorly, with the posterior margin straight.

31. *Scol. sexspinosa*, flava, appendicibus analibus lateralibus ferrugineis (*Scol. septemspinosa*

simillima) pedum postremorum articulo basali supernè complanato superficieque internâ inferiorique singulâ longitudinaliter bispinosâ.—Long. unc. $3\frac{1}{2}$.

Scol. sexspinosa, *Newp. l. c.* p. 96.

Hab. ———? (*v. in Mus. D. Hope.*)

Mandibular tooth well-developed. Dental plates small and transverse; teeth ten, small, obtuse, the three innermost on each side coalescing. Posterior pair of legs moderate; basilar joint longer than in *S. subspinipes*, and subconvex on the upper surface: external margin rounded; internal with two acute black spines, the angular one well-developed and subacute, or slightly bifid; internal and inferior surfaces smooth, each with two spines in a longitudinal series. Second joint smooth, rounded and elongate. Anal scale triangular elongate, with the posterior margin narrowed, slightly rounded, and impressed with a longitudinal sulcus.

32. *Scol. lutea*, antennis corpore pedibusque lætè flavis, capite labio mandibulis appendicibusque analibus saturatè aurantiacis, dentibus 10 obtusis inconspicuis, pedum postremorum articulo femorali subcomplanato: margine interiore spinis 4 nigris e quibus apicali elongatâ acutâ: superficie inferiore spinis 2 longitudinaliter dispositis.—Long. unc. 4.

Hab. In Ins. Caribæis? (*v. in Mus. Brit.*)

33. *Scol. ornata*, aurantiaca, segmentorum lateribus margineque postico articulisque tarsalibus metatarsalibusque viridibus, capite saturatè rubro, dentibus 10 nigris minutis valdè distinctis, pedum paris postremi articulo basali spinis tribus acutis: spinâ apicali acutâ simplici.—Long. unc. 5.

Hab. ———? (*v. in Mus. D. Hope.*)

This is a very beautiful species, perfectly distinct in every respect of form, size, and shape of the head, from *S. subspinipes* and its affinities, but precisely similar as regards the shape and armature of the posterior pair of legs, pre-anal scale, and lateral anal appendages. The upper surface of the basilar joint of the posterior legs is flattened, subconvex, with two small spines on the superior internal margin, and one on the internal surface.

34. *Scol. flava*, tota flava, appendicibus analibus lætè olivaceis, segmento cephalico basilari-que depressis latis, dentibus 10 minutis; pedibus postremis elongatis angustatis; articuli basalis superficie superiore subconvexâ marginibus subacutis: interiore spinis tribus validis acutis: inferiore convexâ spinis duabus acutis nigro-apiculatis.—Long. unc. $5\frac{1}{2}$.

Hab. In Insulâ Ceylon? (*pene me.*)

The posterior legs are moderately elongated, with the basilar and second joint equal and narrowed. Superior surface subconvex, with the external margin subacute: internal margin rounded, with two spines, the apical one elongated, hooked and bifid. Internal surface smooth, with a single spine immediately below the marginal one. Inferior surface convex, with two spines in a longitudinal series on the external side. Preanal scale elongated, trigonate, with the angle rounded, and the posterior margin straight, with a longitudinal impression, most strongly marked in the male. Anal appendages olivaceous, minutely punctured, with the apex bifid.

(c.) Antennæ 18-articulatæ, articulis elongatis; pedum pari postremo gracili haud armato.

35. *Scol. inermis*, saturatè castanea, dentibus labialibus 10 minutissimis, pedum paris postremi gracillimi articulo basali subcylindrico lævi nudo: spinâ articulari apice bifidâ, squamâ præanali elongatâ triangulari margine rectâ.—Long. unc. $5\frac{1}{2}$.

Hab. In Orâ Tenasserim Peninsulæ Ulterioris Indiæ Orientalis. (v. in *Mus. Brit.*)

This species greatly resembles *S. Gervaisii*, but differs from it in the entire absence of spines on the femora of the posterior pair of legs.

36. *Scol. Silhetensis*, ferruginea, segmentorum marginibus posticis saturatè viridibus, antennis articulisque tarsalibus metatarsalibusque rufescentibus; unguibus nigris, pedum paris postremi articulo basali complanato; margine superiore interiore spinis tribus acutis nigris uncinatis: superficie inferiore rotundatâ nudâ, dentibus labialibus 10 minutis.—Long. unc. $5\frac{1}{2}$.

Var. a. Pedum paris postremi articulo basali basi paulùm angustatâ, squamâ præanali elongatâ margine postico rotundatâ, corpore pedibusque coloris magis rufescentis.

Hab. In Silhet Indiæ Orientalis. (v. in *Mus. D. Hope.*)

Cephalic segment convex, cordate, ovate, posterior border thin; basilar segment large, transverse; mandibular tooth large; labium smooth, sutures absent. Dental plates short, transverse, bounding anteriorly a deep ovate impression on the labium; teeth ten, minute, obtuse and coalescing, forming a rounded margin; posterior pair of legs elongated, with the basilar and second joints equal, third joint a little shorter than the second; basilar joint slightly dilated, with the superior surface flattened and of equal width throughout; the external margin subacute, straight; internal margin with three strong spines, the middle one on the internal surface, the angular one bifid and elongated; inferior surface smooth, rounded, toothless. Second joint narrower than the first, slightly constricted and rounded. Preanal scale elongated, concave, with the lateral and posterior margins straight; in the female rounded.

37. *Scol. De Haanii*, Brandt, l. c. p. 59. sp. 2.

Scol. subspinipes, *De Haan in literis, ibid.*

38. *Scol. concolor*, ferruginea, pedibus aurantiacis, pedum paris postremi articulis tribus basalibus æqualibus; articulo basali basi angustato: supra lato complanato: margine interno trispinoso spinis primâ tertiâque maximis acutis: infrâ lævi rotundato edentato. —Long. $6\frac{1}{2}$.

Hab. In Bengaliâ. (*v. in Mus. D. Hope.*)

Head subcordate, ovate; mandibular tooth small; labium smooth; sutures absent; dental plates transverse quadrate, punctured; teeth ten, small, obtusc, but distinct; preanal scale very long, narrow, four-sided, with the posterior margin rounded; lateral anal appendages short, thick, punctured, with the apex produced, bifid; posterior legs moderate, very like those of *S. De Haanii*.

This species agrees very nearly with Brandt's description of *S. De Haanii*, but is perfectly distinct from it. There are several species that have characters similar to those assigned to *S. De Haanii*. *S. concolor* is chiefly marked by the dilatation of the basal joint of the posterior legs and the sharpness of their external margins.

39. *Scol. Childreni*, capitâ segmento basilari mandibulis labio appendicibusque analibus lateralibus ferrugineis, superficie dorsali saturatè olivaceâ, pedibus validis basi rufescentibus apice flavescentibus; pari postremo toto rufo. —Long. unc. $6\frac{1}{2}$.

Scol. Childreni, *Newp. l. c. p. 95.*

Hab. ———? (*v. in Mus. Brit.*)

Cephalic segment cordate, flattened, with the posterior margin rounded; antennæ yellow; mandibular tooth large; labium smooth, slightly excavated, sutures absent; dental plates short, transverse, quadrate; teeth ten, small, indistinct, almost obliterated. Body depressed, broad in the middle, but narrowed anteriorly and posteriorly; lateral anal appendages a little elongated, very smooth, without punctures, slightly margined on the inferior surface, with the apex bifid. Preanal scale four-sided, elongate, with the posterior margin rounded. Legs elongated, strong, and very smooth. Posterior pair with the basilar joint shorter than the second, and flat on its superior surface, with the external and internal margins subacute, smooth. Internal margin with three spines, the middle one on the internal surface, the apical one elongated, bifid. Inferior surface rounded, smooth, without spines. Second joint of the posterior legs slender, smooth, rounded and elongated.

I have named this fine species in honour of J. G. Children, Esq., F.R.S., from whose collection it was obtained. There is only a single specimen of this species in the Museum cabinets.

40. *Scol. Hardwickii*, lætè flava, segmentis 3tio, 5to, 8vo, 10mo, 12mo, 14to, 16to, 18voque saturatè cæruleis, pedibus flavis; paris postremi articulis distalibus cærulescentibus, labio mandibulis appendicibusque analibus lateralibus ferrugineis.—Long. unc. $6\frac{1}{2}$.

Scol. Hardwickii, *Newp. l. c.* p. 96.

Hab. In Insulâ Orientali. (*v. in Mus. Brit.*)

Cephalic segment cordate, margin rounded; antennæ 18-jointed, basilar segment rather short; mandibles and basilar tooth large; labium convex; dental plates small, short, transverse; teeth numerous, at least sixteen, sometimes more, very small, obtuse, and almost obliterated; posterior pair of legs moderate, first and second joints equal; basilar joint subquadrate, flattened on the superior surface, with three minute spines, besides the angular one, on the internal margin, two of which are slightly approximated; angular spine large, bifid; inferior surface convex, toothless. Lateral anal appendages short, obtuse, with the apex very slightly developed. Preanal scale elongate, quadrate, with the posterior margin slightly rounded.

I have great pleasure in naming this species in honour of the late General Hardwick, who was the first to distinguish it, and who has given an excellent figure of it in his drawings in the library of the British Museum, vol. 1,002, 89, 22.

Sectio C.

Pedum paris postremi articulo basali subcylindrico; spinis magnis irregularibusve.

Antennæ 17-articulatæ.

41. *Scol. multidens*, ferruginea, capite rufescente, labio mandibulisque aurantiacis, dentibus labialibus 12-14 parvis, pedibus flavis articulis distalibus virescentibus.—Long. unc. $4\frac{1}{2}$.

Scol. multidens, *Newp. l. c.* p. 97.

Hab. ———? (*v. in Mus. Brit.*)

Cephalic segment cordate, slightly emarginated; labium flattened, smooth; mandibular tooth large, with a very minute tubercle; dental plates transverse, quadrate, convex; teeth small, twelve or fourteen in number; posterior pair of legs moderate, first and second joints equal; superior surface of the basilar joint subconvex, with the external margin subacute; internal margin with three spines, the two anterior somewhat approximated; the internal angular one large, acute; internal surface subconvex, with two spines on

its inferior margin in a longitudinal series; inferior surface with three spines in a longitudinal series. Lateral anal appendages slightly elongated, with the process trifid. Preanal scale four-sided, short, narrowed posteriorly, with a longitudinal impression; the posterior margin rounded.

42. *Scol. punctidens*, capite corpore pedibusque (in sicco) albidis, articulis pedum parium posteriorum 10–12 distalibus virescentibus, antennis viridibus, mandibulis labioque aurantiacis, pedibus postremis margine superiore interno spinis sex longitudinaliter biseriatis e quibus posteriore angularive bifidâ; superficie inferiore spinis sex biseriatis e quibus 4 externis 2 internis.—Long. unc. $3\frac{3}{4}$.

Scol. punctidens, Newp. l. c. p. 97.

Hab. In Americâ Australi? (v. in *Mus. Brit.*)

In its general appearance this species is very like *S. cingulata*, to which it approaches very closely in the form of the head, the frontal portion of which is cordate ovate, with two longitudinal elevated ridges; antennæ slightly pubescent, 17-jointed, green; basilar segment large and wide, with the mandibles strong and projecting, orange-coloured; basilar tooth large, with a tubercle near its apex; labium orange, smooth, convex, with the sutures very distinct, with a small black spot at the external base of the mandibles; dental plates quadrate, deeply punctured, with the posterior external angle produced; teeth six, black, short, and obtuse; posterior pair of legs slightly elongated; superior surface of the basilar joint convex, margins rounded, with six sharp spines, arranged in two longitudinal series; two in a series on the upper surface, and four in an irregular series on the internal margin; the internal angular spine large, bifid; interior and inferior surfaces rounded, with six spines on the inferior arranged in two longitudinal series, two in the internal and four in the external.

- 43.? *Scol. clavipes*, Koch, Deutschl. Crust. &c. heft 9. t. 1. Brandt, l. c. p. 62. sp. 8.

- 44.? *Scol. ambigua*, Brandt, l. c. p. 63. sp. 9. (e Cap. Bon. Spei.)

It is doubtful whether these species may not belong to the subfamily *Cor-mocephalinæ*, as I have not had an opportunity of examining them. They are inserted here only provisionally.

45. *Scol. viridicornis* (TAB. XXXIII. fig. 1, 2, 4, 5; TAB. XL. fig. 5, 6.), antennis dorsoque saturatè viridibus, segmentorum margine posteriore flavo, mandibulis labio segmento pedumque pari postremo saturatè rufis, pedibus flavis; articulis tarsalibus viridibus.—Long. unc. 5.

Scol. viridicornis, *Newp. l. c.* p. 97. sp. 12.

Scol. Hopei, *Newp. MSS.*

Hab. In Brasiliâ. (*v. in Mus. Brit. et D. Hope.*)

Cephalic segment cordate; basilar segment large; mandibular tooth large, with a minute tubercle near its apex; labium smooth, sutures distinct; dental plates large, thick, punctured, subquadrate, a little elongated posteriorly; teeth eight, black, small, obtuse, with the three internal ones on each side approximated; posterior pair of legs short, with the basilar joint thick, and subconvex on its superior and external surface, with six or seven spinulæ arranged irregularly on the internal margin and superior surface, the posterior or apical one large and acute. Internal surface flattened, with one sharp spine; inferior surface with five or six small spines arranged in three longitudinal, alternating series, two in each series. Lateral anal appendages red, short, with the apex bifid or subacute. Preanal scale four-sided, elongate, with the posterior margin straight.

This is a very marked and beautiful species, but is subject to much variation in regard to colour. It very much resembles *S. variegata*, but differs from it in the legs being much thicker, and in the spines on their upper surface being irregularly distributed, as well as in the absence of annulations on the legs; the spines on the legs also vary in number.

There are three specimens in Mr. Hope's cabinet, and two in the cabinets of the British Museum.

46. *Scol. variegata*, suprâ saturatè castanea, segmenti cephalici margine anteriore segmentorum dorsalium margine posteriore labio mandibulis superficieque ventrali lætè aurantiacis, antennis olivaceis, pedibus aurantiacis olivaceo-fasciatis.—Long. unc. 5.

Scol. variegata, *Newp. l. c.* p. 97.

Hab. In Demerarâ. (*v. in Mus. Brit. et D. Hope.*)

Cephalic segment large, cordate; mandibular tooth large; labium convex, sutures distinct; dental plates large, quadrate; teeth six, small, obtuse; posterior pair of legs short and strong, with the superior surface of the basilar joint plano-convex; margins rounded. Internal superior surface and margin with five slightly curved spines, the two posterior of which are subapproximated longitudinally, the third placed on the middle of the internal surface, the fourth, very minute, on the superior surface, and the fifth or angular one much elongated, bifid or trifid. Inferior surface convex, with seven small spines arranged in three longitudinal series, two in the external and internal, and three in the middle series. Lateral anal appendages ferruginous, obtuse, with the apex pointed, and the posterior margin compressed and acute. Preanal scale quadrate, elongate, a little narrowed posteriorly, with the posterior margin slightly rounded.

47. *Scol. angulata*, saturatè viridis, segmento basilari labio mandibulisque aurantiaco-rufis, mandibulis apice nigris, pedibus flavescentibus articulis tarsalibus metatarsalibusque viridibus; paris postremi articulis femoralibus rufescentibus, segmentorum omnium superficie dorsali complanatâ: margine anteriore laterali angulato.—Long. unc. $4\frac{1}{2}$.

Scol. angulata, *Newp. l. c.* p. 97.

Hab. In Insulâ Trinitatis. (*v. in Mus. Brit.*)

Cephalic segment cordate, quadrate, with the posterior margin rounded; dental plates small, quadrate; teeth eight, small, acute, the two internal ones on each side coalescing. Posterior pair of legs moderate, with the first and second joints equal; femoral joint with the superior surface and margins rounded; superior surface and internal margin with six or seven spines, arranged in two irregular triangles; internal angular process short, armed with three parallel spines. Internal surface with four or five spines; inferior surface with nine spines arranged in three longitudinal series, two in the external and middle, and four or five in the internal series. Lateral anal appendages reddish brown, with the process yellow, short, but projecting, quadrifid. Preanal scale short, quadrate, a little narrowed posteriorly, with the margin rounded.

48. *Scol. cristata*, brunnea, antennis pedibusque virescentibus, dentibus 6 e quibus exteriore quadrato interno utrinque bifido, segmento postremo convexo cristâ medianâ longitudinali, pedibus postremis brevibus; articulo basali margine interiore spinulis 5 acutis: superficie inferiore spinis 6 longitudinaliter triseriatis, 2, 2, 2.—Long. unc. $6\frac{3}{4}$.

Scol. cristata, *Newp. l. c.* p. 98.

Hab. In Chinâ? (*v. in Mus. Brit.*)

The cephalic segment of this species is small, but the basilar large, with the prebasilar fold very distinct. Mandibles acute, apex black, with the tooth large and slightly tuberculated. The labium is smooth and flattened, with the longitudinal and transverse sutures distinct. The dental and subdental plates and teeth very distinct, the external tooth on each side almost quadrate. The posterior segment convex, shield-shaped, with an elevated obtuse longitudinal crest, commencing in a point on the front of the segment. Posterior pair of legs short; the basilar joint longer than the second, with the superior surface convex; the external margin rounded; the internal margin and surface with five acute spines tipped with black, the four anterior in two subapproximated alternating series; the fifth or apical spine acute, with the apex bifid. The internal surface flattened, with a single spine. Inferior surface with six acute spines, arranged in three longitudinal series, two in each series; those of the external and internal parallel with each other, the distal one of the latter forming part of a diagonal line with the single spine on the internal surface, and the angular or posterior on the superior internal margin. Lateral appendages short, convex, minutely punctured, with the apex short,

trifid. Preanal scale elongate quadrate, with a longitudinal depression, posteriorly rounded.

This specimen was brought by Capt. Sir E. Belcher, R.N., of the *Sulphur*, and is believed to be from China. I have a strong suspicion however that this is a mistake, and that it is a South American species.

49. *Scol. canidens*, saturatè olivacea, dentibus 8; tribus interioribus in unaquâque laminâ brevibus obtusis approximatis laminæ superficie excavatâ: exteriore reliquis longiore, pedum paris postremi articulo basali margine interno serie duplici spinularum acutarum 8 v. 9: superficie inferiore excavatâ spinis 6 v. 8 biseriatis.—Long. unc. 2 $\frac{3}{4}$.

Scol. canidens, *Newp. l. c.* p. 98.

Hab. In Egypto. (*v. in Mus. Brit.*)

Cephalic segment subovate, elongated, with the posterior margin nearly straight; basilar segment large; dental plates elongated, quadrate, with the anterior margin straight, or slightly excavated; the inferior surface with a deep triangular excavation bounded by the internal and external tooth on each plate; teeth eight, the three internal ones on each plate obtuse, subapproximated; the external one acute, elongated, and distinct from the others; labium smooth, separated from the dental plates by a distinct border. Posterior pair of legs short, with the basilar joint longer than the second; superior surface flattened, with the external margin subacute; internal margin with from eight to nine minute spines, the seven or eight anterior ones very small, six of which are arranged in a double subapproximated series; internal angular process large, bifid. Inferior surface of the joint slightly excavated longitudinally, with a series of from six to eight irregularly-placed minute spines on each border of the excavation. Lateral anal appendages small, narrow, with the process a little elongated, and multifid at the apex. Preanal scale quadrate, with the posterior margin slightly rounded.

50. *Scol. violacea*, Fabr. Ent. Syst. tom. ii. p. 289. Guérin, Icon. Règne Anim. de Cuv., Ins. pl. 1. fig. 7. Gervais, loc. cit. sp. 1. p. 50. Lucas, loc. cit. sp. 1. p. 544.

Scol. crassipes, *Brandt, loc. cit.* sp. 5. p. 60?

51. *Scol. gigas*, lætè ferruginea, segmento cephalico antennisque saturatè viridibus, pedibus nigrescentibus v. saturatè olivaceis; articulis pallidiùs fasciatis, superficie ventrali olivaceâ, pedum postremorum femoribus labio mandibulisque rufis: his apice nigris.—Long. unc. 10.

Scol. gigas, *Leach in Trans. Linn. Soc.* xi. p. 383. *Id. in Zool. Misc.* iii. p. 42. *Newp. l. c.* p. 98. sp. 25.

Hab. In Venezuelâ. (*v. in Mus. Brit. et "United Service."*)

Cephalic segment small, cordate; antennæ 17-jointed, short; labium smooth, sutures distinct; mandibular tooth small; dental plates large, somewhat quadrate, with the anterior margin straight, punctured, and the posterior angle elongated; labial palpi with a small tubercle near the distal interior angle of the second joint; third joint spoon-shaped, with the superior margin ciliated and the apex toothed. Basilar joint of the posterior pair of legs convex, with the external margin rounded; internal margin irregular, with seven minute black spines, four of which are ranged in a line that extends diagonally upwards; articular spine minute; internal surface rounded, with seven or eight small black spines, arranged in three oblique series, two, three or four in each series, the middle series extending backwards and upwards to the upper surface of the joint; inferior surface rounded, with six minute spines, arranged in two transverse series; inferior surface of the distal extremity of the terminal joint of all the legs with a minute spine sunk in a little foveola. Lateral anal appendages short, thick, with the process short and acute. Preanal scale four-sided, a little elongated and narrowed, with the posterior margin rounded.

The specimen in the British Museum from which I have taken this description is that described by Leach. It has been stuffed with cotton wool, while in the recent state, and hence has retained its original colours; but it is extended greatly beyond its original size, and now measures about thirteen inches in length. Its natural length seems to have been from ten to eleven inches. There is no notice attached to it of the country from whence it was derived, but there is a specimen of the same species in the Museum of the United Service, that was sent by Sir Robert Kerr Porter from Venezuela in South America.

52. *Scol. gigantea*, capite labio superficie dorsali pedibus postremis appendicibusque analibus ferrugineis, superficie ventrali lutescente, segmentis posterioribus 12 v. 13 longitudine plùs duplò latioribus, laminis dentalibus subquadratis; dentibus 8 nigris: exteriore triangulari acutâ distante: tribus reliquis in unaquâque laminâ in superficiem latam coalitis, pedibus postremis subcylindricis; articulo basali obconico intùs infernèque spinis numerosis minutis armato.—Long. unc. 10½.

Scol. gigantea, *Linn. Syst. Nat.* ed. ii. p. 1063. *Fabr. Ent. Syst.* ii. sp. 5.

Scol. 2. *Brown, Hist. Jamaica*, t. 42. f. 4.

Hab. In Insulâ Jamaicâ? (*v. in Mus. Brit.*)

Mandibles black at the apex, the tooth large, acute, and with a small tubercle. Posterior legs moderate, with the femoral joint obconic, and one-third longer than the tibial; internal margin and surface rounded, with from twelve to fifteen small, sharp, black

spines, arranged partly on the superior surface. Inferior surface convex, with from eight to ten spines irregularly distributed. Angular process large, tuberculiform, with from six to eight minute black spines. Distal angle of the femoral joint of the eleven posterior pairs of legs with from three to five spinulæ. Preanal scale elongate quadrate, margin rounded. Lateral anal appendages very short, obtuse, with the process tuberculiform, with five minute black spines.

This magnificent and truly gigantic species is quite distinct from all hitherto described. It differs from *S. gigas* of Leach in the more cylindrical form of the posterior pair of legs and the obconic femoral joints, and in the legs being all of an uniform colour.

The specimen in the Museum cabinet is believed to be from Jamaica. It agrees more nearly than any known species with fig. 4. tab. 42. of "*The large Centipie*," in Brown's 'History of Jamaica,' the description of which is, "*Scolopendra 2: maxima, pedibus triginta sex.*" I have no doubt, however, that this description, so far as relates to the number of legs, is inaccurate, as on referring to the figure I find that *nineteen* pairs of legs are delineated, while not only are some of these incorrectly placed, but the subbasilar legs are entirely omitted. Yet this is the species which Linnæus describes, apparently from Brown's figure and account of it, as Linnæus himself has written the name "*Scolopendra gigantea*" on the margin of the page of his own copy of Brown's work, now in the possession of the Linnean Society. That Linnæus described his species from Brown's figure seems evident from the fact, that in the copy of the 'Systema Naturæ,' dated 1766, Holmiæ, used by himself for reference, and now in the Society's library, he refers to Brown's work, but says, "*S. pedibus utrinque xvii. Habit. in America;*" and adds, "*sequente multo major, sed simillima.*" Fabricius has exactly copied Linnæus's description, so far as the characters and locality of the species are concerned; so that it is very probable that neither of these two authorities even saw the species they have named. It may be desirable in support of this opinion to compare Brown's observations with those of Linnæus. He says, after his description:—"This insect is sometimes found on the wharfs of Kingston, and commonly thought to be brought there among the timbers and dye-woods imported from the main. It is generally very large, and sometimes measures above ten inches in length."

Divisio 2. *Latidentatæ.*

Laminæ dentales subquadratæ; dente intimo lato, extimo triangulari acuto distante. Pedes postremi spinis minutis numerosis. Spiracula paris anterioris maxima.

53. *Scol. valida*, ferruginea, labio mandibulisque rufis, dentibus 6, laminis dentalibus excavatis, segmentorum marginibus lateralibus liberis, pedibus postremis brevibus latissimis complanatis: spinulis 8 v. 9 sparsis in superficie margineque interiore superiore: 9que in superficie inferiore.—Long. unc. $4\frac{1}{2}$.

Scol. valida, Lucas in Webb & Berth. *Hist. Nat. des Iles Canar.* ii. p. 49. no. 42.

Hab. In Insulis Canariis. (v. in *Mus. Brit.*)

This is a distinct species, and is very readily identified. The cephalic segment is small, cordate, quadrate; dental plates very distinct, and deeply excavated on their surface; teeth six, the internal one bifid; dorsal segments with free elevated lateral margins. The posterior pair of legs are short, very broad, depressed, quadrate, with the external and internal margins rounded; the internal margin and surface of the femoral joint with eight or nine minute, irregularly-distributed, black spinulæ, the angular one quadrifid. Inferior surface flattened, with nine spinulæ arranged in three longitudinal series. Lateral anal appendages very short; preanal scale quadrate cordate, with the posterior margin slightly rounded.

54. *Scol. alternans*, flavescenti-brunnea, capite mandibulis labio appendicibusque analibus saturatè ferrugineis, dentibus labialibus 6: intimis acutis latis spathulatis: extimis angustatis acutissimis, pedum postremorum articulo basali elongato subconvexo interne infernèque spinulis numerosis minutis nigris inferioribus transversim seriatis armato.—Long. unc. 6.

Scol. alternans, Leach in Linn. *Trans.* xi. p. 383. *Id.* in *Zool. Misc.* iii. p. 41.

The great Scolopendra, Shaw, *Nat. Misc.* i. t. 9?

Scol. morsitans, Beauvois, *Ins. Afr. et Amer.* 152.

Scol. Sagrae, Gerv. *l. c.* p. 50. sp. 8. Brandt, *l. c.* p. 66. sp. 14. Lucas, *l. c.* p. 545. sp. 8. *Newp. l. c.* p. 98.

Hab. In Insulis Caribæis. (v. in *Mus. Brit.*)

Cephalic segment cordate, rounded posteriorly; basilar segment very large; mandibles strong, with the tooth small, but armed with a minute tubercle near its apex; labium flattened, with the transverse suture distinct; dental plates quadrate, with the posterior margin slightly elongated; teeth six, large, with the internal one on each side sharp, broad, spatulate and formed for cutting, with the two external ones on each side narrowed and very acute; femoral joint of the posterior pair of legs elongated and flat-

tened, with the superior surface subconvex, and the external margin subacute; internal margin and surface with a multitude of minute black spinulæ, from thirty to forty in number, distributed both over the internal surface and margin, and on the internal superior surface; internal angular process large, with the apex multifid. Inferior surface rounded, with from fifteen to twenty very minute points distributed in little irregular transverse clusters of three or four in each cluster, usually arranged in a transverse direction; tibial joint shorter than the femoral, rounded. Lateral anal appendages smooth, but not polished, with the apex produced and multifid, and a minute tooth at the external posterior border; preanal scale flattened, small and elongate, rounded posteriorly, with the margin straight.

The chief characteristic marks of this species are the labial teeth, and the number and great irregularity of the tubercles on the posterior pair of legs. These are too irregular to afford a good description. The specimen from which the above description was taken has Dr. Leach's autograph specific name attached to it.

55. *Scol. Grayii*, capite corpore pedibusque saturatè ferrugineis, pedibus longis compressis; paris postremi articulo femorali elongato; spinis parvis circiter 15 in margine superficieque interiore in seriebus 3 v. 4 obliquis: 12-14 que in superficie inferiore in seriebus tribus longitudinalibus alternantibus dispositis.—Long. unc. $6\frac{1}{2}$.

Scol. Grayii, *Newp. l. c.* p. 98.

Hab. ———? (*v. in Mus. Brit.*)

Cephalic segment cordate, with two longitudinal, slightly elevated cristæ; basilar segment with two oblique ones. Mandibular tooth moderate; labium smooth, with very minute punctures; dental plates strong, subquadrate; teeth six, the two external ones on each side strong, acute, triangular, with the internal one on each side acute, dilated, subquadrate at its anterior margin; dorsal surface of the body with two minute elevated cristæ, extending from the head to the terminal segment; basilar segment of the posterior pair of legs elongated, with the superior surface and external margin rounded; internal surface and margin with at least fifteen small spines, three of which are arranged in a longitudinal series on the internal margin, and the others in three oblique lines on the internal surface; inferior surface convex, with from twelve to fourteen spines arranged in three alternating longitudinal series. Lateral anal appendages smooth, with the apex multifid, and three minute tubercles on the posterior margin. Preanal scale narrow, elongated, with posterior margin straight.

I have much pleasure in naming this fine species in honour of J. E. Gray,

Esq., F.R.S., chief officer of the Zoological department of the British Museum.

56. *Scol. complanata*, corpore pedibusque postremis rufescentibus, segmentis mediis præsertim dilatatis, dentibus 8, labio mandibulisque rufis apice nigris, antennis pedibusque virescentibus, pedibus postremis angustis complanatis spinis in superficie internâ infernâque numerosissimis.—Long. unc. 5.

Scol. complanata, *Newp. l. c.* p. 98.

Hab. In Insulâ Caribæâ S^ti Christophori. (*v. in Mus. Brit.*)

Cephalic segment cordate, ovate; mandibular tooth large, with a minute tubercle at its base; labium smooth, transverse, sutures distinct; dental plates quadrate; teeth eight, the external one on each side acute, the internal one notched and very much dilated, spatuliform at its anterior margin; antennæ longitudinally striated with minute hairs at the apex; posterior pair of legs with the basilar joint elongated, superior surface flattened, with the internal margin and surface armed with from twenty-one to twenty-four minute spines, arranged in three irregular oblique series; internal angular process quinquefid, with two of the spines elongated and hooked downwards; sometimes one or two spines on the superior surface of the joint; inferior surface with seventeen small black spines, thirteen of which are arranged in three alternating longitudinal series, and the remaining four disposed in a triangle or quadrangle at the inner inferior surface of the base of the joint. Lateral anal appendages short, with the process quinquefid, and four minute tubercles on the posterior margin. Preanal scale small, elongated, very narrow posteriorly, with the margin straight.

57. *Scol. incerta*, brunnea, capite mandibulis labio appendicibusque lateralibus saturatè rufis, antennis pedibusque flavis, dentibus 6 nigris obtusis, pedibus postremis complanatis angustis elongatis; articulo basali subconvexo spinis ultra 20 acutis nigris in superficie superiore internâ; processu articulari elongato mammillari multifido.—Long. unc. $5\frac{1}{4}$.

Hab. ———? (*v. in Mus. D. Hope.*)

This species so very closely resembles *S. complanata*, that I have some doubt whether it ought to be described as distinct; but it seems to differ in some peculiarities which usually afford good distinctions of species. The cephalic segment is small, cordate, ovate, with its posterior margin almost circular, and there are two longitudinal elevations on its surface, and also two oblique ones on the basilar segment, as in *S. Grayii*. The dental plates are subquadrate, with a deep sulcus; teeth six, obtuse, the external one distant; labium smooth, with scattered obsolete punctures, and a transverse ridge

behind the sutures; mandibles tipped with black; legs yellow, the tibio-femoral articulation of the penultimate and antepenultimate pairs with two or three black spinulæ; posterior pair elongated, narrowed, with the basilar joint longer than the tibial, subconvex on its upper surface, with more than twenty black spines on the surface and internal margin; articular process elongated, nipple-shaped, with the apex multifid; inferior surface with about twelve spinulæ arranged in three irregular series. Anal appendages dark red, with the apex elongated and multifid, and two spinulæ on the posterior border. Preanal scale yellow, small, elongate, trigonal, margin straight.

58. *Scol. multispinosa*, saturatè ferruginea, antennis articulisque tarsalibus metatarsalibusque viridibus, dentibus labialibus 6, pedum postremorum articulo basali elongato complanato subconvexo; spinulis in margine interno 6 vel 7 in seriebus 2 alternantibus: processu angulari multifido: spinulisque in superficie internâ inferiore 17-20 in seriebus 5 longitudinalibus.—Long. unc. $4\frac{3}{4}$.

Scol. multispinata, *Newp. l. c.* p. 98.

Hab. In Insulâ Caribæâ S^{ti} Christophori. (*v. in Mus. Brit.*)

Cephalic segment cordate, rounded; mandibular tooth large; dental plates subquadrate, elongated posteriorly; teeth six, the internal one on each side broad, spatulate, with the edges sharpened, the external one on each side small and acute; labium and mandibles very dark ferruginous; posterior pair of legs slightly elongated, with the basilar joint elongated, flattened, somewhat compressed; superior surface with six or seven minute black spines, arranged in two alternating series, near the internal margin, which is rounded, and has a series of six teeth, internal to those on the surface; internal angular process with the apex multifid; lateral and inferior surfaces convex, with from seventeen to twenty minute spines, arranged in three irregular longitudinal series on the external side, and two on the internal; second joint flattened, with the margins rounded. Lateral anal appendages ferruginous red, smooth, with the apex multifid, and three minute black spines on the external posterior margin. Preanal scale four-sided, elongate, narrowed posteriorly, with the margin straight.

GENUS 6. SCOLOPOCRYPTOPS, *Newp.*

Oculi nulli. *Segmenta podophora* 23, posteriora angustata. *Pedum paria* totidem. *Segmentum cephalicum* cordatum, imbricatum. *Labium* edentulum. *Antennæ* 17-articulatæ. *Appendices anales laterales pedesque posteriores* elongati.

1. *Scol. Miersii*, testacea, capite mandibulisque saturatè rufis, antennis pedibusque flavis, pedibus postremis gracillimis; articulo femorali subcylindrico lævi articulo tibiali lon-

giore; spinâ medianâ unicâ acutâ in margine superiore interno alterâque majore in superficie inferiore.—Long. unc. $3\frac{1}{2}$.

Hab. In Brasiliâ. (*v. in Mus. D. Miers.*)

This is a distinct species, and has the cephalic segment very convex, ovate quadrate, a little narrowed in front, with a slight emargination between the antennæ. The labium and mandibles are thickly and deeply punctured. The posterior pair of legs are very slender, with the inferior surface compressed or somewhat carinated. Preanal scale punctured, subquadrate, narrowed posteriorly and slightly emarginated.

I have named this species in honour of J. Miers, Esq., F.R.S., F.L.S. &c., by whom it was captured.

2. *Scol. melanostoma*, ferruginea, lævis, stigmatibus nigris, pedibus elongatis flavescentibus pubescentibus; pedum postremorum articulo femorali subcylindrico spinâ unicâ medianâ in margine superiore interno alterâque in superficie inferiore, appendicibus analibus lateralibus valdè elongatis acutis.—Long. unc. $1\frac{3}{4}$.

Hab. In Insulâ Caribæâ S^{ti} Vincentii, *Rev. L. Guilding.* (*v. in Mus. D. Hope.*)

This species very closely resembles the preceding, but differs from it in the elongation of the anal appendages, the colour of the spiracles, and also in size. It differs also from *S. sexspinosa* in the absence of a spine at the distal articulation of the femur, in the pubescence of the legs, and in the posterior border of the preanal scale being slightly emarginated, as in *S. Miersii*.

3. *Scol. ferruginea*, lateritia polita, pedibus flavis, segmentis convexis marginibus lateralibus distinctis, labio angustato profundè punctato impressionibusque 2 lateralibus, appendicibus analibus lateralibus elongatis acutis, squamâ præanali subcordatâ complanatâ margine posteriore rotundatâ.—Long. unc. $1\frac{1}{2}$.

Scolopendra ferruginea, *Linn. Syst. Nat.* ed. 12. p. 1063. no. 6. *Fabr. Entom. Syst.* ii. p. 389. no. 5. *Gerv. l. c.* no. 17.

Scolopendre rousse, *De Geer. Mém.* vii. p. 568. pl. 43. f. 6.

Hab. ———? (*v. in Mus. Linn.*)

The species described by Linnæus is stated by De Geer to have been from Africa, and this statement has been copied by Fabricius, but I strongly suspect this to have been a mistake, and that, like other species of this genus, it is either from North or South America or the West Indies. De Geer has both figured and described this species, and his description agrees with the specimen that remains in the Linnean cabinet.

4. *Scol. 6-spinosa* (TAB. XXXIII. fig. 20–23), ferruginea, segmentis posterioribus attenuatis, pedibus elongatis flavis; postremorum articulo femorali spinâ unicâ magnâ in superficie inferiore alterâ minore medianâ in margine superiore interno tertiâque minutissimâ articulari, appendicibus analibus lateralibus valdè elongatis.—Long. unc. $1\frac{4}{10}$.

Cryptops sexspinus, Say in *Journ. Acad. Nat. Sci. Phil.* ii. *Œuvres Entom.* i. p. 24. *Gerv. in Ann. Sci. Nat.* Janv. 1837. p. 51. sp. 4. *Lucas, Hist. Nat. Anim. Artic.* p. 547. sp. 4. *Newp. l. c.* p. 100.

Hab. In Georgiâ et Floridâ. (*v. in Mus. Brit.*)

This description is taken from one of Say's original specimens. It has the mandibular tooth very distinct, but the labium is convex, with a straight border, without denticulations. The posterior legs are much elongated, and the lateral appendages margined, and terminated with an acute spine. The preanal scale is subcordate, with the posterior border slightly rounded.

5. *Scol. longitarsis* (TAB. XL. fig. 10.), aurantiaca, capite mandibulis labio segmentorumque margine posteriore rufis, pedibus pubescentibus flavis; postremis attenuatis valdè elongatis articulis tarsalibus metatarsalibusque 12: femore tibiâ longiore, illo infernè longitudinaliter 4-spinoso, hâc bispinosâ.—Long. unc. $1\frac{3}{4}$.

Hab. In Insulâ Caribæâ S^{ti} Vincentii, *Rev. L. Guilding. (v. in Mus. D. Hope.)*

This is an exceedingly interesting species. The cephalic segment is convex, subquadrate, ovate, with a slight sulcus between the insertions of the antennæ: the dental border of the labium is nearly straight, with a very slight emargination: mandibles tipped with black: dorsal plates convex, not margined, but impressed on each side with a deep sulcus, and having the posterior angles slightly produced; posterior pair of legs elongated, tapering, fourteen-jointed; the femur and tibia spined. Lateral anal appendages also much elongated, with the apex black and acute. Preanal scale quadrate, rather narrow behind, with the margin straight.

Genus 7. CRYPTOPS, Leach.

Segmenta podophora 21. *Antennæ* 17-articulatæ. *Oculi* nulli vel inconspicui. *Labium* edentulum. *Pedum postremorum* articulo basali plerumque inermi. *Appendices anales laterales* obtusæ.

The genus *Cryptops*, as defined by Dr. Leach, is a well-established section; but some species have been included in it which seem not to answer precisely to the characters that have been given. Thus the *C. sexspinosa*, Say,

belongs to *Scolopocryptops*, and *C. Savignii*, described by Leach himself, has the femora of the posterior pair of legs spined.

1. *Crypt. australis*, flava, capite antennis mandibulis labio segmentoque postremo aurantiacis, scutis dorsalibus lateraliter rotundatis anticè transversè sulcatis impressionibusque 4 longitudinalibus, pedibus flavis pubescentibus; articulis femoralibus tibialibus tarsalibusque æqualibus.—Long. unc. $1\frac{1}{10}$.

Hab. In Insulâ Australi Novæ Zelandiæ. (v. in *Mus. Brit.*)

This specimen is interesting from its being the first *Cryptops* hitherto obtained from the southern portion of the globe, and I have in consequence named it from this circumstance. It was collected by Mr. Percy Earl. The posterior pair of legs have been lost from the only specimen I have yet seen, but it nevertheless affords sufficient marks of distinction. It is a somewhat thick species, and the body is a little enlarged posteriorly. The cephalic segment agrees well in form with that of *C. hortensis*, but is a little more contracted in front, and has a slight depression between the insertions of the antennæ: the labium is perfectly smooth, without teeth, but with a slight longitudinal suture, and the mandibles are obscurely punctured.

2. *Crypt. nigra*, cærulescenti-nigra, labio superficieque ventrali flavis, mandibulis antennis pedibusque ferrugineis; postremis espinosis brunneis nigro-annulatis, oculo unico nigropone antennis.—Long. unc. $2\frac{1}{2}$.

Hab. In Indiâ Orientali. (v. *fig. inter Icon. Hardw. in Mus. Brit.* vol. 11,002. pl. 90. no. 23.)

The drawing from which I have named and described this species is dated May 30, 1820; and when it is stated that General Hardwicke's drawings were all made in India from recent specimens, they may be regarded as nearly correct, certainly as to colouring, although in minute anatomical details there may occasionally be errors. Thus in the figure above described there are twenty-one joints to each antenna, but in every other respect the figure is that of a true *Cryptops*. A similar mistake occurs in the figure of *Scolopendra Hardwickii* in the same collection, as I have proved by comparison with the species itself.

3. *Crypt. hortensis* (TAB. XXXIII. figs. 23, 24.), ferruginea, capite subovato anticè angustato, labio impressione profundâ triangulari in sulcum longitudinalem desinente, antennis pedibusque pilosis, articulis femoralibus inermibus subconicis tibiali longioribus, squamâ præanali elongatâ quadratâ posticè rotundatâ.—Long. unc. 1.

Crypt. hortensis, *Leach in Edinb. Encycl.* vii. p. 408. *Id. in Trans. Linn. Soc.* xi. p. 384. *Id. in Enc. Brit. Suppl.* i. p. 431. *Id. Zool. Misc.* iii. t. 139. *Donov. Brit. Ins. Gerv. l. c.* sp. 1. *Lucas, Hist. Nat. Anim. Art.* p. 546. sp. 1. *Koch, Deutschl. Crust. Myriap. &c.* heft ix. no. 1.

Hab. In Angliâ. (*v. in Mus. Brit.*)

This character is derived from Leach's specimens.

4. *Crypt. Savignii*, flavescens, capite ferrugineo; *Crypt. hortensi* simillima sed major, femoribusque postremis spinosis.—Long. unc. $1\frac{6}{10}$.

Crypt. Savignii, *Leach, Zool. Misc.* iii. sp. 2. *Gerv. l. c.* sp. 2. *Lucas, l. c.* p. 546. sp. 2. pl. 3. f. 2. *Newp. l. c.* sp. 5.

? *Scolopendra germanica*, *Koch, Deutschl. Crust. Myriap. &c.* heft ix. no. 2.

Hab. In Angliâ. (*v. in Mus. Brit.*)

5. *Crypt. hyalina*, pallida, lævis, lineis 2 longitudinalibus saturatoribus, capite antennisque ferrugineis, pedibus postremis brunneis spinulis 5 in articulo tertio tarsalive.—Long. lin. 7.

Crypt. hyalina, *Say, l. c.* sp. 1. *Id. Œuvr. Entom.* i. sp. 23. *Gerv. in Ann. Sci. Nat.* Janv. 1837, sp. 3. *Lucas, Hist. Nat. Anim. Artic.* p. 546. sp. 3.

Hab. In Georgiâ et Floridâ. (*v. in Mus. Brit.*)

There is a single specimen in the Museum, and this was sent by Say to Dr. Leach.

6. *Crypt. anomolans* (TAB. XXXIII. figs. 25, 26.), flava, antennis 15(?)-articulatis, labio angustissimo sulcis 2 longitudinalibus curvatis, segmento basilari maximo subquadrato, scutis dorsalibus impressionibus 2 lateralibus obliquis, squamâ præanali brevi subquadratâ marginibus rotundatis, appendicibus lateralibus profundè punctatis scabris rotundatis.—Long. unc. $1\frac{3}{4}$.

Crypt. anomolans, *Newp. l. c.* p. 100. sp. 2.

Hab. ———? (*v. in Mus. Brit.*)

Genus 8. THEATOPS*, *Newp.*

Ocelli distincti. *Antennæ* breves, subulatæ, 17-articulatæ. *Segmentum cephalicum* truncatum subimbricatum; margine labiali denticulato. *Pedum postremorum* articulo magno, obconico, abbreviato. *Pedum* paria 21. *Appendices anales laterales* obtusæ.

* Θεαρός, visible; and ὠψ, the eye,

This genus is perfectly distinct in the form of the head and the short antennæ from the true *Scolopendræ*, in the structure of the respiratory organs from the *Heterostominæ*, and in the number of legs from *Scolopendropsis*; while it approaches *Cryptops*, but differs also from that genus in the distinctness of the ocelli, and in the possession of labial teeth.

1. *Theat. postica*, aurantiaca, ocellis inconspicuis lateralibus, dentibus 8 minutis, segmento postremo maximo elongato quadrato lateribus rotundato medio profundè sulcato margine posteriore transverso, pedibus postremis brevibus crassis rotundatis attenuatis; articulo basali brevissimo conico.—Long. unc. $\frac{8}{10}$.

Crypt. postica, Say in *Journ. Acad. Nat. Sci. Phil.* ii. p. 112. *Id. Œuvr. Entom.* i. p. 24. *Gerv. in Ann. Sci. Nat.* Janv. 1837. p. 51. sp. 5. *Lucas, Hist. Nat. Anim. Art.* p. 547. sp. 5. *Newp. l. c.* p. 100.

Hab. In Georgiâ Floridâque Orientali. (*v. in Mus. Brit.*)

The mandibles are short, thick, and have a distinct basal tooth; the dental plates are elongated and widely separated; the teeth eight, minute, but distinct. The basal joint of the posterior pair of legs much shorter than the second, which is twice as long as the succeeding joints. The lateral anal appendages deeply punctured. Preanal scale flat, with a median longitudinal sulcus and scattered punctures, with the margin straight.

This description is taken from a specimen in the Museum sent by Say to Dr. Leach, and having the ticket of the latter attached to it.

Subfamilia 2. HETEROSTOMINÆ.

Segmentum cephalicum basilareque truncata. Dentes maximi, elongati. Spiracula magna, rotundata, haud valvularia, in paribus 10.

The *Heterostominæ* are a distinct subfamily, characterized by the number and structure of their external respiratory organs, and by the great size of the labial teeth. They seem to comprise two genera, that differ from each other in the size of the mandibular tooth, in the armature of the posterior legs, and in the form of the respiratory orifices, which latter in *Branchiostoma* are projecting, and closed by a branchiform membrane thrown into folds, and reminding us very strongly of the branchiform structure of the spiracles in some water-beetles, as in *Dyticus*. In *Heterostoma* the spiracle is a perforated sieve-like membrane.

GENUS 9. BRANCHIOSTOMA*, *Newp.*

Antennæ pedesque elongati. Dentes triangulares acuti, mandibularis maximus. Spiracula circularia, membranâ branchiformi corrugatâ intus vestita. Pedes postremi graciles; spinis minutis, articulari plerumque obsoletâ.

1. *Branch. lithobioides*, virescens fasciis saturatoribus transversis, capite segmento postremo superficie ventrali femoribusque aurantiacis, articulis tibialibus tarsalibusque viridibus, dentibus 6 e quibus 2 interiores cujusvis laminæ coaliti, pedibus postremis cylindricis spinulis 6 in margine superiore interno.—Long. unc. $1\frac{3}{4}$.

Hab. In Chinâ. (*v. in Mus. D. Hope.*)

In its general appearance this species resembles a *Lithobius*. The mandibles and mandibular tooth are large, and the labium is smooth, with a few scattered obsolete punctures. The dental plates are distinct, quadrate, and the teeth six, black and acute, the two internal ones on each plate united. All the legs are elongated; the posterior pair are slender, cylindrical, and armed on the internal superior surface of the femoral joint with six spinulæ, but there is no articular spine or process. The inferior surface has six acute black spinulæ, arranged in two longitudinal series, three in each series; those in the internal one are slightly approximated. The lateral appendages are elongated, with the apex bifid. Preanal scale subquadrate, narrowed posteriorly, with the border emarginated.

2. *Branch. longipes*, fusca, mandibulis labio appendicibusque analibus lateralibus aurantiacis, dentibus 4 triangularibus lobulatis acutis nigris, pedibus postremis elongatis; articulo basali gracili paulùm complanato spinulis 3 in margine superiore interno e quibus 2 anteriores subapproximatæ 7que in superficie inferiore.—Long. unc. $1\frac{3}{4}$.

Hab. ———? (*v. in Mus. Brit.*)

The cephalic segment is somewhat flattened; antennæ 19-jointed; teeth two on each plate, lobulated, triangular, and very acute; posterior pair of legs elongated, with the femoral longer than the tibial joint, slender, and with its upper surface flattened, with three spinulæ on the internal margin, the two anterior of which are subapproximated, and near the base of the joint; inferior surface with seven black spinulæ, arranged in two longitudinal series, four in the outer and three in the inner one. Lateral anal appendages orange-coloured, punctured, elongated, with the apex bifid, and a single spinula on the external surface. Preanal scale subcordate, with the posterior margin straight.

* Βράγχια, *branchiæ*; στόμα, *mouth*, *spiracle*.

3. *Branch. nuda*, cærulescenti-violacea, pedibus flavescens; postremis valdè elongatis cylindricis: articulis femoralibus tibialibus tarsalibusque subæqualibus: metatarsalibus compressis: femoribus nudis vel infernè spinulâ unicâ minutissimâ armatis.—Long. unc. $1\frac{5}{4}$.

Hab. In Novâ Hollandiâ, ad Paramatta. (v. in *Mus. nostr.*)

Cephalic segment subtriangular; antennæ 20-jointed; teeth eight, black, rather small, very acute, the two internal ones on each plate subapproximated; mandibular tooth very large, with a tubercle at its apex. Labium smooth, polished. Posterior pair of legs naked and cylindrical, with only an extremely small spine on the under surface near the base. Lateral anal appendages short, punctured, with the apex rather obtuse, or slightly bifid. Preanal scale short, subquadrate, with the posterior margin slightly rounded.

4. *Branch. spinicauda* (TAB. XL. fig. 7.), pallidè brunnea, lineâ unicâ dorsali medianâ saturiore, pedibus longis; postremorum articulo basali in margine interiore medio spinâ unicâ maximâ armato.—Long. unc. $1\frac{4}{10}$.

Scolopendra spinicauda, *Newp. l. c.* p. 98.

Hab. In Africâ Boreali, prope Tripoli, *Ritchie.* (v. in *Mus. Brit.*)

Cephalic segment cordate, subquadrate, with the posterior margin straight; antennæ 17-jointed, large at the base; basilar segment large, narrowed posteriorly; mandibular tooth large, with a small spine at its apex; labium smooth, with the longitudinal sulcus distinct; dental plates narrowed, subquadrate, with the posterior external angle elongated; teeth eight, triangular, acute, with the second and fourth on each plate most projecting from the plane of the teeth; posterior pair of legs elongated, with the basilar joint rather short, and its superior and lateral surfaces rounded and armed on the internal superior margin with one very large spine, and one very minute one at the internal posterior angle. Inferior surface somewhat quadrate, with six sharp spines, arranged in two longitudinal alternating series, three in each series, the external one on the margin, and nearest the base of the joint. Lateral anal appendages roughened, tuberculous, with the apex smooth, elongated and pointed. Preanal scale cordate, subquadrate, with the posterior border slightly emarginated.

This is an interesting and very elegantly formed little species, several specimens of which were sent to the Museum in the same bottle with others of *Scolopendra spinigera*, of which at first I regarded it as the other sex. It varies in sometimes having four spines in the external inferior series.

GENUS 10. HETEROSTOMA*; *Newp.*

Antennæ elongatæ, 20-articulatæ. *Segmentum cephalicum* parvum, anticè rotundatum; *basilare* latum, margine anteriore transverso. *Dentes* maximi, lanceolati, acuti. *Spiracula* magna, cribriformia, in paribus 10. *Pedes postremi* spinis validis armati.

This is a very distinct genus, the characters of which are constant in all the species. The mandibular tooth is small, and often entirely absent. The respiratory organs are not closed by valves, but are formed, externally, each by a large suboval, cribriform plate (TAB. XL. fig. 8 *a, b.*), placed vertically at the sides of the second, fourth, sixth, seventh, ninth, and succeeding alternate segments. The perforations in these plates communicate internally with a large number of minute tracheal vessels, one to each perforation, and do not together open at once into a large tracheal stem, like the valvular spiracles in other *Scolopendridæ*. This peculiarity of structure of the breathing organs is associated with a very marked form of head, large elongated antennæ, acute and powerful labial teeth, and strong posterior legs, of which the femora have large acute spines. These characters seem to indicate very predaceous habits.

Most of the species hitherto obtained are from the western coast of Africa and from Australia, and there is also one of the most marked species of the genus from Ceylon, and one from the South Sea Islands.

This genus includes the majority of the species described as *Longidentata* † in my former account of specimens in the collection at the British Museum.

1. *Heter. trigonopoda*, nigro-viridis, antennis viridibus apice ferrugineis, dentibus 8, mandibulis labioque virescenti-ferrugineis, pedibus flavescenti-viridibus, segmento postremo pedibus appendicibusque analibus lateralibus ferrugineis, pedum postremorum articulo basali spinis in margine interno 5 magnis totidemque biseriatis in superficie inferiore.
—Long: unc. 4.

Scolopendra trigonopoda, *Leach, Zool. Misc.* iii. p. 36. *Gerv. in Ann. Sci. Nat. l. c.* p. 50. sp. 7. *Lucas, Hist. Nat. Anim. Art.* p. 545. sp. 7. *Newp. l. c.* p. 99.

? *Scolopendra Eydouxiana*, *Gerv. in Voy. de la Favorite*, v. p. 180. t. 53.

Hab. In Africâ, Congo et Senegal. (*v. in Mus. Brit.*)

* *Erepos*, different; στόμα, mouth, spiracle.

† *Annals and Mag. Nat. Hist.*, Feb. 1844, p. 99.

Cephalic segment small, with the posterior margin straight; basilar segment large: antennæ ferruginous, and pubescent at the apex: mandibular tooth rather small: labium smooth: dental plates large, elongated, subquadrate, with the posterior external angle produced, deeply punctured: teeth eight, large, black, triangular and very acute, with the margin a little arched: basilar joint of the posterior pair of legs slightly elongated, convex on the upper surface, with the external margin rounded: internal margin with five large acute spines, four of which are somewhat approximated, and arranged two and two in a double series; the fifth or angular one very large, acute. Internal and inferior surfaces rounded, with five large acute spines, in two longitudinal series, two on the internal inferior margin, and three in the external series; tibial joint subquadrate, smooth, with the margins subacute. Lateral anal appendages elongated, punctured, bifid at the apex, with one strong spine on the inferior external margin: posterior superior margin compressed, with three spinous tubercles, the two posterior of which are very small and approximated laterally. Preanal scale four-sided, short, with a longitudinal impression, with the posterior border deeply emarginated.

On examining Dr. Leach's specimen very carefully, and comparing it with the description and figure given by M. Gervais of his *Scolopendra Eydouxiana*, I much suspect that these two species are identical. I am strengthened in this opinion by the fact that both are from the same country, Africa, as a ticket in Dr. Leach's handwriting, indicating the habitat, is attached to his specimen in the British Museum. A second specimen agreeing exactly with Leach's was brought from Congo by Mr. Curror. These specimens agree with M. Gervais' description in every particular, excepting the two series of spines on the inferior surface of the posterior pair of legs. In this respect I am fain to imagine that the innermost of these series might have been regarded by M. Gervais as belonging to the internal surface of the joint; or that it might be wanting in his specimen. Several specimens recently brought home by Mr. Fraser, of the Niger expedition, agree with Dr. Leach's specimen in every particular, excepting one specimen, which has had one of its legs reproduced, and in this instance the spines were more numerous and less regular than in the others.

2. *Heter. spinosa* (TAB. XL. fig. 8.), olivacea, mandibulis labio pedibusque postremis ferrugineis, dentibus 6 maximis, spiraculorum laminis saturatè brunneis, pedum postremorum articulo basali robusto subconico spinis 5 validis alternantibus in margine interiore spinâ angulari acutâ in mare crassâ dilatâtâ (σ) in fœminâ magnâ: spinisque totidem

in superficie inferiori, appendicibus analibus lateralibus longissimis rotundatis acutis.
—Long. unc. 5.

Hab. In Insulâ Ceylon. (v. in Mus. "United Service" et Soc. Zool.)

The segments are sometimes margined with green? Cephalic segment ovate, cordate; basilar segment large, transverse: labium and mandibles ferruginous: teeth six, black and triangular; dental plates punctured; mandibular tooth absent. Posterior pair of legs strong; femoral joint elongated, with the upper surface convex, the external margin subacute, and the internal with five strong spines, the four anterior of which are arranged in two alternating series, and the fifth, or apical one is very long and acute in the female, and is developed into a broad lancet-shaped appendage in the male. Inferior surface armed with four and sometimes five strong spines, in two longitudinal series. Lateral anal appendages very long, rounded, curved and slender, with a strong spine on the external margin and the apex trifid. Preanal scale subcordate, deeply emarginated.

3.? *Heter. fasciata*, aurantiaca, capitis segmentorumque marginibus posterioribus virescentifasciatis, laminis spiraculorum saturatè aurantiacis, pedum postremorum articulo basali secundo longiore spinis 5 marginalibus totidemque in superficie inferiore e quibus tres in serie externâ duæ in serie internâ.—Long. unc. 5.

Hab. ———? (v. in Mus. Brit.)

This species very closely resembles *H. spinosa*, and may perhaps be only a variety of it. The colour of the dried specimen in the Museum is orange-yellow with green fasciæ, the respiratory plates deep orange, and the labium and mandibles ferruginous: mandibular tooth absent; teeth six, large, black: femoral joint of the posterior pair of legs longer and stronger than the tibial; superior surface subconvex; external margin rounded, internal armed with five spines arranged in two alternating series, the apical spine large and acute. Inferior and lateral surfaces flattened, with three spines on the external and two on the internal margin. Lateral appendages elongated, with the apex bifid, and two spinulæ on the posterior inferior surface. Preanal scale slightly elongated, subquadrate, deeply emarginated, with the angles rounded.

4. *Heter. platycephala*, capite depresso majusculo, mandibulis labio pedibusque postremis castaneis, corpore antennis pedibusque pallidè olivaceis, dentibus 6 magnis nigris acutis sulcatis, pedibus postremis spinis 5 validis in margine interiore elevato irregulari 6que in superficie inferiore.—Long. unc. 4.

Hab. In Insulis Oceani Pacifici. (v. in Mus. Brit.)

The cephalic segment is broad, subtriangular, and with the basilar segment chestnut-coloured;

the labium is flattened, with the dental plates very large, and armed with six powerful, triangular, acute, deeply sulcated, black teeth, the internal one on each side bifid: the body and legs are olivaceous, with obscure fasciæ; posterior pair castaneous, elongated, with a raised longitudinal line on the upper surface of the basilar joint, with the margins acute, the internal one with five sharp spines in two alternating series. Inferior surface with six spines in two longitudinal series, three in each series. Lateral anal appendages elongated and acute, with two spinulæ on the external surface. Preanal scale subtrigonal, with the posterior border emarginated.

5. *Heter. sulcidens*, saturatè olivacea v. cærulescenti-violacea, mandibulis labio pedibusque postremis fulvo-aurantiacis, dentibus 6 nigris acutis margine serratis longitudinaliter profundè sulcatis, pedum postremorum articulo basali porcâ longitudinali elevatâ spinis in margine interiore 5 longis acutis 6que in superficie interiore.—Long. unc. $3\frac{1}{4}$ —6.

Scolopendra sulcidens, *Newp. l. c.* p. 99.

Scolopendra squalidens, *Newp. var. l. c.* p. 99.

Scolopendra scabriventris, juvenis, *Id. l. c.* p. 99.

Hab. In Novâ Hollandiâ, Paramatta. (*v. in Mus. Brit., Soc. Linn. nostroque.*)

The specimens in the Linnean Society's collection measure nearly six inches in length and are of a dark blue colour: the antennæ are fuscous and pubescent at the apex; the labium smooth and the dental plate deeply punctured: the legs are yellowish green, with the claws black; the spines on the internal margin of the posterior pair are very strong and acute, and are arranged in two irregular series, the second and fourth spines being on the internal surface; the inferior surface of the joint is also armed with six spines, three of which are arranged in a longitudinal series on the external border, and two in a series on the internal, with the remaining spine, the anterior one of the internal series on the internal surface, near the basal articulation of the limb. Lateral appendages punctured, with the apex bifid, and two spines on the external inferior surface and five or six very minute ones on the superior margin. Preanal scale cordate, deeply emarginated.

6. *Heter. sulcicornis*, ochracea, antennis elongatis pilis minutis strigosis, dentibus 6 magnis acutis margine denticulatis longitudinaliter sulcatis, pedum postremorum articulo basali spinis 6 nigris in margine interiore superiore 6que in superficie inferiore.—Long. unc. $3\frac{3}{4}$.

Scolopendra sulcicornis, *Newp. l. c.* p. 99.

Hab. In Novâ Hollandiâ ad Portum Essington. (*v. in Mus. Brit.*)

This is a very distinct species, readily identified. It has the basilar segment large, but narrowed posteriorly; mandibular tooth small; dental plates large, with the external angle elongated, twisted and punctured; teeth six, very large, black, acute, triangular, serrated on the margins, and with deep longitudinal sulci. Basilar joint of the posterior pair of legs with five black, acute, alternating spines on the internal superior margin, and six, arranged in two longitudinal series, on the inferior surface, three in each series; those of the inner one irregular. Lateral appendages slightly elongated, with the apex bifid, and a single spinula on the inferior margin, with five on the upper. Preanal scale subquadrate, narrowed posteriorly, with the margin slightly excavated.

7. *Heter. flava*, corpore pedibusque lætè flavis, segmento cephalico viridi, antennis aurantiacis, dentibus 6 minutis nigris, pedum postremorum articulo basali gracili subquadrato tibiâ longiore in superficie interiore spinis 5 nigris armato.—Long. unc. 3.

Hab. In Novâ Hollandiâ, ad fluvium Cygnorum. (*v. in Mus. D. Hope.*)

This species is allied to *H. sulcicornis*, but differs in having the posterior legs longer and more slender, and the spines larger, more acute, slightly hooked, and of an intense black. Those on the superior margin are arranged in equidistant alternating series. On the inferior surface there are six spines, three of which form a single longitudinal series on the external, and three on the internal margin; the middle one of the latter coalescing at its base with the corresponding one in the outer series. The lateral anal appendages have each two spines on the side, and from three to four small ones on the superior edge. The preanal scale is subquadrate, with the border slightly emarginated.

8. *Heter. megacephala* (TAB. XL. fig. 9.), corpore brevi olivaceo, capite magno convexo, antennis mandibulis labio appendicibusque analibus lateralibus rufescenti-olivaceis, dentibus 6 triangularibus acutis, pedum postremorum articulo basali tibiali longiore: spinis in margine interiore 5 longis acutis 6que in superficie inferiore magnis e quibus 5 longitudinaliter biseriatis sextus intermedius.—Long. unc. $3\frac{1}{4}$.

Scolopendra megacephala, *Newp. l. c.* p. 99. sp. 35.

Hab. In Novâ Hollandiâ ad Portum Essington, *Gilbert.* (*v. in Mus. Brit.*)

The distinctive characters of this species are the size of the head and the general shortness of the body, as compared with other species. The cephalic segment is very convex, large, rounded anteriorly, with the posterior margin straight; antennæ reddish olive, and pubescent at the apex; basilar segment very large, convex, almost quadrate; mandibular tooth small, with a deep incision at the inner side of the joint. Labium smooth; longitudinal suture distinct; dental plates large, reddish olive, with the pos-

terior external angle elongated; teeth six, large, black, triangular and acute, with the margins slightly serrated. Posterior pair of legs rather short, with the basilar joint longer than the second, and the superior surface convex, with five large, acute, black spines on the internal superior margin, arranged in two alternating series, the apical spine simple. Inferior surface rounded, with six large, acute and slightly curved spines, arranged in two longitudinal series, three on the outer margin and two on the inner, with the sixth near the median line of the joint, between the two series. Lateral anal appendages much elongated and pointed, with the margin rounded, and one spine on the external surface, near the apex, which is bifid; the posterior superior margin a little compressed, with three spinous tubercles. Preanal scale quadrate, deeply emarginated, with a longitudinal sulcus.

This is an exceedingly interesting and well-marked species, although it very much resembles *Scolopendra sulcidens*. But it is easily distinguished by the large size of the head and shortness of the body. The *Heterostomæ* are marked instances of the very same type of species existing on the western coast of Australia as on the corresponding shores of Africa.

9. ? *Heterostoma spinulosa*.

Scolopendra spinulosa, Brandt, *Recueil*, &c. sp. 12. p. 65.

M. Brandt expresses some doubt whether this species is not identical with *Scolopendra Eydouxiana* of M. Gervais, which it seems to approach very closely. If such be the case, it may prove to be identical with *S. (Heterostoma) trigonopoda* of Dr. Leach.

10. *Heterostoma elegans*.

Scolopendra elegans, Brandt, *loc. cit.* p. 74.

Hab. Ad Caput Bonæ Spei.

11. *Heterostoma fulvipes*.

Scolopendra fulvipes, Brandt, *loc. cit.* p. 72.

From the general character of the spines on the legs of these two species, as described by Brandt, I suspect that they may belong to this genus, but I have not yet had an opportunity of examining them; and M. Brandt's description does not enable me to decide the question, as the number of joints to the antennæ is not stated, nor the form of the head indicated.

Genus 11. SCOLOPENDROPSIS, Brandt.

Ocelli utrinque 4. *Segmentum cephalicum* truncatum. *Pedum paria* 23. *Appendices anales laterales* obtusæ, nec spinosæ nec mucronatæ.

1. *Scolopendropsis Bahiensis*, Brandt, Recueil, &c. p. 73-75.

This appears to be a good genus, established by Brandt, as indicated by the number of legs, truncated cephalic segment, and absence of spines to the lateral appendages. It differs from *Scolopocryptops* in possessing ocelli, and in the form of the cephalic segments. As I have not yet obtained a specimen, the characters given are drawn up from Brandt's description.

Subfamilia 3. CORMOCEPHALINÆ.

Segmenta cephalicum basilareque truncata. *Antennæ* 17-articulatæ. *Labium* angustum; *dentibus* parvis. *Spiracula* valvularia.

The *Cormocephalinæ* differ from the *Scolopendrinæ* in having the cephalic segment abruptly truncated and not imbricated. In this respect they resemble the *Heterostominæ*, from which, however, they differ most completely in the number of joints to the antennæ, the structure of the teeth, and the number and structure of the respiratory organs. They seem to form one distinct genus, which is divisible into three groups; *first*, with the posterior legs slender and elongated; *secondly*, with the posterior pair of legs short and clavated; and *thirdly*, a subgenus, *Rhombocephalus*.

Genus 12. CORMOCEPHALUS*, Newp.

Antennæ breves, attenuatæ. *Segmentum cephalicum* breve, abruptè truncatum. *Spiraculorum* valvularium paria 9. *Segmenta podophora* 21.

A. *Pedes* postremi graciles, elongati.

1. *Corm. rubriceps*, capite labio mandibulisque saturatè rufis, corpore nigrescenti subcomplanato posticè valdè attenuato anticè dilatato, pedibus antennisque rufescenti-olivaceis, pedibus postremis in margine superiore interno 3-spinosis in superficie internâ inferiorique spinis 7 obliquè biseriatis.—Long. unc. $4\frac{3}{4}$.

* Κορμός, a trunk, and κεφαλή, head.

Scolopendra rubriceps, *Newp. l. c.* p. 99; *et in Dieffenb. New Zeal.* ii. p. 270.

Hab. In Novâ Zealandiâ, *Dieffenbach.* (*v. in Mus. Brit.*)

Cephalic segment dark red, minutely punctured, and deeply emarginated. Mandibular tooth and dental plates large; teeth eight, acute, large and projecting. Antennæ reddish olive, very finely pubescent; body dark brown, polished, somewhat flattened, with the margins produced, and the second, third and fourth segments narrowed, those of the posterior half of the body dilated; legs moderate, reddish olive, with the basilar joint of the posterior pair a little elongated, subconvex, with the external margin rounded; internal margin rounded, with three spines, the posterior angular one large, bifid; interior and inferior surfaces rounded, with three sharp spines disposed on an elevated ridge on the external surface, passing diagonally outwards; and four spines on a similar ridge, directed obliquely backwards and inwards on the inner surface, the last of which is situated at the base of the angular spine of the superior margin. Lateral anal appendages brown, with the apex light-coloured and bifid. Preanal scale four-sided, elongate, narrowed posteriorly, with a longitudinal median sulcus; posterior margin straight.

2. *Corm. lobidens*, saturatè castaneus, antennis pedibus ventrequè lætè flavis, margine dentali angustissimo; dentibus utrinque in lobos 2 acutos extùs basi lobulatos coalitis, pedibus postremis cylindricis elongatis gracilibus in margine interiore 5-spinulosis: spinulâ angulari bifidâ.—Long. exsicc. unc. 8.

Scolopendra lobidens, *Newp. l. c.* p. 99.

Hab. ———? (*v. in Mus. Brit.*)

Basilar segment and mandibles very large and projecting; labium convex, deep red, tipped with black; teeth united on each side into two subtriangular, obtuse lobes, each with a smaller lobule external to its base; the anterior margin of each dorsal plate rounded, with an elevated border; basilar joint of the posterior pair of legs rounded, and narrowed in the middle, but enlarged at their distal articulation; superior internal margin with four minute spines, the second and third approximated at their base; the angular process bifid; interior surface with one or two minute spines; inferior surface convex, with three minute teeth arranged in a single longitudinal series. Preanal scale elongate, almost triangular, with the posterior margin straight.

B. Pedes postremi breves, crassi, clavati.

3. *Corm. aurantiipes*, olivaceus, pedibus aurantiacis, laminis dentalibus angustatis; dentibus 6 brevibus obtusis, pedum postremorum articulo basali convexo porcâ elevatâ medianâ diagonali; margine interno acuto spinulis 3 quarum angulari bifidâ; su-

perficie inferiore spinulis 5 quarum 3 in margine exteriore 2 in interiore.—Long. unc. $3\frac{1}{2}$.

Scolopendra aurantiipes, *Newp. l. c.* p. 99.

Hab. In Novâ Hollandiâ, ad Portum Essington. (*v. in Mus. Brit.*)

Antennæ large at their base, 17-jointed; basilar segment short, wide, convex; labium smooth, with the anterior portion flattened, with a transverse sutural ridge; dental plates almost quadrate, narrowed anteriorly, and faintly punctured; teeth six, the internal one on each side bifid and conjoined with the middle one, the external one distinct; posterior pair of legs subconic, with a slight elevation on the femur that passes transversely inwards to the middle of the articulation with the tibia; external margin rounded; internal one acute, with three spines, the angular one large and bifid; internal surface flat, with two spines, arranged in an oblique longitudinal line, near the distal articulation; inferior surface with three spinulæ on a raised diagonal line on the external, and two on a corresponding line on the internal margin. Lateral appendages short, bifid. Preanal scale elongated, narrowed posteriorly; margin straight.

4. *Corm. obscurus*, pallidè olivaceus, antennis segmentorumque marginibus posticis viridibus, capite mandibulis labioque saturatè ferrugineis, pedibus postremis ochraceis, dentibus 8 nigris obtusis, pedibus postremis quam in *Corm. aurantiipede* gracilioribus spinisque majoribus cæterùm simillimis.—Long. unc. $2\frac{1}{2}$.

Hab. In Novâ Hollandiâ, prope Sydney. (*v. in Mus. Brit.*)

This species so closely resembles *C. aurantiipes*, as hardly to be distinguished from it in the dried state, except by the coloured margins of the segments, the larger and more acute spines, and the more slender form of the legs. It is also much smaller in size. There are four specimens in the Museum, all agreeing exactly with the above description.

5. *Corm. fecundus*, olivaceus, capite labio mandibulisque saturatè castaneis politis sparsè punctatis, antennis lætè viridibus, pedibus postremis ochraceis convexis; superficie inferiore spinulis nigris quatuor obliquè biseriatis in margine externo duabusque in interno uniseriatis.—Long. unc. 3— $3\frac{1}{2}$.

Hab. In Novâ Hollandiâ, prope Paramatta. (*v. in Mus. Brit. nostroque.*)

In addition to the characters above stated I may add, that the antennæ are brown at the apex; the dental plates are narrowed and rounded at their margin; teeth eight, black, obtuse; mandibular tooth very large; posterior pair of legs with the femoral shorter

than the tibial joint, convex, subconical, with the external margins rounded, the internal subacute, with three spinulæ, the two anterior subapproximated; the apical one large and acute. Inferior surface with four spinulæ on the external and two on the internal margin; internal surface with two spinulæ, which with the angular process form a series directed obliquely upwards. Lateral appendages dark chestnut, punctured, with the apex elongated, bifid, or simple. Preanal scale flattened, clongate, with the posterior margin narrow and transverse.

This species very much resembles *C. aurantiipes* and *C. obscurus*, but differs from both in the number and arrangement of the spines on the inferior surface of the legs, and also in the greater depth of the excavation. I have received it, in various stages of growth, from about one inch in length to nearly four inches, and in very great abundance, from Paramatta, where it appears to be the prevailing species. On this latter account I have named it *C. fœcundus*. The smallest specimens agree with the largest in almost every particular of form, colour, number of joints to the antennæ, and number and arrangement of the spines on the legs. The chief difference is in regard to colour, which in the youngest individuals is indistinct and often confused.

6. *Corm. Westwoodii*, saturatè viridis, pedibus flavis, antennis cæruleis, mandibulis segmento cephalico segmentis posterioribus pedibusque aurantiacis, dentibus 8 nigris parvis acutis, pedibus postremis crassis validis spinulis 3 acutis in margine interiore 2que in superficie internâ; superficie inferiore spinulis 4 in margine externo 2que in interno. —Long. unc. 3.

Scolopendra Westwoodii, *Newp. l. c.* p. 100.

Hub. In Novâ Hollandiâ, prope Sydney. (*v. in Mus. Brit., Banks. et D. Hope.*)

This species varies much in colour, but always preserves the same general appearance. The dark blue antennæ and yellow legs contrast very prettily with the red head and posterior pair of legs. The labium is thickly punctured: the dental plates are small and narrowed anteriorly, with the margin rounded: teeth eight, minute, black, distinct. Posterior pair of legs short and thick; femoral joint convex, subconic, a little longer than the tibial, with three acute spinulæ on the rounded internal margin, the apical one the largest, bifid; internal surface with two spinulæ, which with the apical one form a series diagonally upward. Inferior surface with four spines, arranged in two alternating equidistant series on the external margin, and three in a single series on the internal. Lateral anal appendages elongated, minutely punctured, with the apex acute or bifid. Preanal scale subquadrate, margin straight.

7. *Corm. ambiguus*, (in sicco) fulvus, capite antennis mandibulis labioque ferrugineis, pedibus flavis; postremis subangustatis: articulo femorali convexo spinulis 3 acutis nigris in margine interno: superficie inferiore spinis 4 in margine externo totidemque in interno.—Long. unc. $2\frac{3}{4}$.

Scolopendra ambigua, Brandt, l. c. p. 63. sp. 9?

Hab. In Africâ Australi, D. A. Smith. (v. in Mus. Brit.)

In Dr. Smith's specimen the cephalic segment is cordate, quadrate, with the basilar segment large; dental plates quadrate; teeth eight, black, distinct; femoral joint of the posterior pair of legs with three black spinulæ on the superior internal margin, the two anterior of which are subapproximated, the apical one acute. Inferior surface with four spinulæ on the external margin, arranged in a double approximated series, and four in a single series on the internal margin and surface, forming a series of five with the apical spine. Lateral appendages subobtuse, deeply punctured, ferruginous, with two short spinulæ. Preanal scale elongated, tetragonal, with the posterior margin slightly rounded.

This species was brought from Southern Africa by Dr. A. Smith. It appears to be the *Scolopendra ambigua* of M. Brandt, although I have still a slight doubt, as the form of the cephalic segment has not been described by that distinguished naturalist.

- 8.? *Corm. miniatus*, capite mandibulis labio pedibus totis segmento posteriore appendicibusque miniatis, antennis cæruleis, corpore olivaceo, segmentorum marginibus saturatè viridibus, pedibus postremis spinulis 3 in margine superiore interno 5que in superficie inferiore.—Long. unc. $2\frac{1}{4}$.

Hab. In Novâ Hollandiâ, prope Adelaide. (v. in Mus. Brit.)

This species so closely resembles the following in every particular of structure, although not in colour, that I have some doubt whether it is other than a variety. Consequently I have described it with a query.

9. *Corm. subminiatus*, capite mandibulis labio segmento postremo pedibusque miniatis, corpore depresso flavo, segmentorum marginibus viridibus, dentibus 6 brevibus obtusis, spinulis in superficie internâ inferiorique 6 in seriebus 2 divergentibus dispositis.—Long. unc. $2\frac{1}{4}$ — $3\frac{1}{2}$.

Scolopendra subminiata, Newp. l. c. p. 100. sp. 46.

Hab. In Novâ Hollandiâ, ad fluvium Cygnorum. (v. in Mus. Brit., Soc. Linn., D. Hope.)

In Mr. Hope's specimen the femora of the whole of the legs, excepting those of the poste-

rior pair, are light orange, with the metatarsal and tarsal joints green; the basilar and posterior segments and legs are bright orange, and the cephalic and the posterior and lateral margins of the dorsal segments dark green. The teeth are six, short, obtuse and coalescing, the external one distinct and acute. The posterior legs are short, with the basilar joint subconic, with the external margin subacute, the internal with three spinulæ, the apical one acute, the two anterior subapproximated. Inferior surface convex, with three spinulæ in a raised diverging series on the external margin and three on the internal, the last situated on the internal surface near the articulation. Anal appendages punctured, short, with the apex bifid. Preanal scale subtriangular, with the posterior margin straight.

Formerly I regarded this as a variety of *C. Westwoodii*, but it is quite distinct, although it resembles that species in the structure of the posterior legs. It is one of the most beautiful of the genus.

10. *Corm. pallipes*, pallidè virens, antennis pedibusque flavescentibus, margine dentali arcuato; dentibus 8 obtusis, pedum postremorum articulo femorali convexo brevi subquadrato spinulis 3: superficie inferiore spinulis 4 in margine externo 2que in interno. —Long. unc. $1\frac{3}{4}$.

Hab. In Insulâ Van Diemen et in Novâ Zealandiâ. (*v. in Mus. Brit.*)

The cephalic segment is flattened, subquadrate; mandibular tooth large; dental plates arched, short; teeth eight, obtuse; posterior pair of legs short, thick, with three spinulæ on the internal superior margin; inferior surface with four spinulæ in an irregular series on the external and two on the internal margin. Lateral appendages slightly elongated. Preanal scale with the margin straight.

This is a species that may readily be mistaken at first for the young of *C. subminiatus* or *C. aurantiipes*. I believe it however to be distinct, as the specimens from Van Diemen's Land and New Zealand correspond in size and general appearance, and differ from the young of a closely-allied species, *C. fœcundus*, which, however small, always approach somewhat in colour to the adult specimens.

11. *Corm. violaceus*, capite corporeque pallidè olivaceis violaceo tinctus, antennis cæruleis, mandibulis labioque aurantiacis, articulis tarsalibus viridibus, dentibus 8 nigris ferè obsoletis, pedum postremorum articulo femorali subconico tibiali longiore spinulis 3 in margine interno 2que superficialibus; superficie inferiore spinulis 4 in margine externo 2que in interno. Long. unc. $2\frac{1}{4}$.

Hab. In Novâ Zealandiâ, prope Wellington. (*v. in Mus. Brit. et D. Hope.*)

The apical spine of this species is slightly elongated, and trifid at its apex; and the four spinulæ on the inferior external margin are arranged in two subapproximated pairs, and the two on the internal margin in a single longitudinal series. The lateral anal appendages are deeply punctured and elongated, with the apex bifid. Preanal scale subquadrate, with the posterior margin almost straight.

12. *Corm. lineatus* (TAB. XL. fig. 11.), sordidè ochraceus, superficie dorsali lineis 5 longitudinalibus elevatis, pedibus postremis clavatis; articulo basali brevissimo conico spinâ unicâ angulari minutâ articulisque omnibus sulco longitudinali profundo in superficie superiore versus extremitatem distalem.—Long. unc. $1\frac{1}{2}$.

Hab. In Insulâ Caribæâ S^{ti} Vincentii, *Guilding.* (v. in *Mus. D. Hope.*)

The antennæ of this species are very thick at their base, with the joints short, as in *Geophilus*; the labium is narrowed anteriorly, and marked with a triangular impression; the dental plates are distinct and elongated, with an elevated median crest; the teeth six, subobsolete, the external one most distinct; the posterior legs are clavate, rounded, with the basilar joint conic, much shorter than the second joint and rounded, without spines on the inferior surface. The lateral appendages punctured; and the preanal scale cordate, with the posterior margin rounded.

13. *Corm. Guildingii*, ochraceus, superficie dorsali lineis 2 longitudinalibus impressis distantibus, pedibus postremis clavatis maximis elongatis; articulis æqualibus longitudinaliter impressis; basali conico: superficie internâ complanatâ serie obliquâ spinarum 3 minutarum totidemque in margine articulari distali: superficieque inferiore spinulis 3 in lineâ obliquâ elevatâ dispositis.—Long. unc. 1.

Hab. In Insulâ Caribæâ S^{ti} Vincentii, *Guilding.* (v. in *Mus. D. Hope.*)

The dental plates of this species are distinct, but the teeth very minute. The lateral anal appendages smooth, with the middle internal surface roughened with a multitude of minute tubercles. Preanal scale subquadrate, with the margin rounded.

The species is named in honour of the late Rev. Lansdowne Guilding, by whom this species and *C. lineatus* were collected.

Subgenus RHOMBOCEPHALUS*, *Newp.*

Segmentum cephalicum elongatum, subtriangulare; *subbasilare labiumque* angustissima.

1. *Rhomb. viridifrons*, aurantiacus, segmento cephalico anticè segmentorum dorsalium mar-

* Ρόμβος, lozenge-shaped, κεφαλή, head.

ginibus pedibus postremis antennisque saturatè viridibus, dentibus 8 parvis obtusis, pedibus postremis elongatis; articulo basali in superficie superiore rotundato spinis in margine interno 4 minutis biseriatis: in superficie inferiore paulùm excavato spinis 2 in margine externo totidemque in interno.—Long. unc. 2.

Scolopendra viridifrons, *Newp. l. c.* p. 100.

Hab. In Galliâ Australi? (*v. in Mus. Brit.*)

2. *Rhomb. Gambiæ*, sordidè ochraceus lineâ longitudinali dorsali nigrâ, segmento basilari magno, pedibus postremis articulis æqualibus magnis; articulo basali subconico in superficie superiore convexo spinisque 2 in margine interno quarum apicali elongatâ bifidâ: in superficie inferiore paulùm excavato spinulis 2 nigris in margine interiore 4que obliquè biseriatis in interno.—Long. unc. $1\frac{1}{2}$.

Hab. In Africâ, ad ripas fluvii Gambiæ. (*v. in Mus. D. Hope.*)

The dental plates of this species are elongated, with their margin arched and narrowed; teeth eight, minute, but distinct. Lateral appendages deeply punctured, as in *Cryptops*, with the apex bifid. Preanal scale subtrigonal, with the posterior margin straight.

3. *Rhomb. parvus*, saturatè olivaceus, mandibulis labio pedibusque flavis, pedibus postremis elongatis; articuli basalis superficie superiore convexâ spinulis in margine interno 3 e quibus angulari bifidâ: superficie internâ complanatâ 1-spinosâ: inferiore rotundatâ spinis 2 longitudinaliter seriatis, appendicibus lateralibus profundè punctulatis, apice spinis 3 minutis, squamâ præanali subtriangulari.—Long. unc. 1.

Hab. In Insulâ Malta. (*v. in Mus. Brit.*)

4. *Rhomb. politus*, pallidè olivaceus nitidus, lineâ longitudinali nigrâ medianâ unicâ, antennis cæruleis, pedibus virescentibus, mandibulis flavis, appendicibus analibus lateralibus profundè punctatissimis, pedum postremorum articulo basali subelongato dilatato complanato spinulis 5 in margine interno biseriatis e quibus apicali simplici elongatâ: in superficie inferiore profundè excavato spinulis in utroque margine 4.—Long. unc. $1\frac{1}{2}$.

Hab. In Novâ Hollandiâ Occidentali. (*v. in Mus. D. Hope.*)

The dental plates are elongated, with eight distinct teeth.

5. *Rhomb. brevis*, saturatè viridis, capite segmento postremo appendicibus pedibusque rufis, antennis articulisque tibialibus tarsalibusque cæruleis, pedum postremorum articulo basali recto secundo longiore: margine interno spinulis 3 e quibus angulari subelongatâ: in superficie inferiore paulùm excavato spinis in utroque margine 3 minutis longitudinaliter seriatis, squamâ præanali trigonâ.—Long. unc. $\frac{3}{4}$.

Hab. In Novâ Hollandiâ Occidentali. (*v. in Mus. D. Hope.*)

Family 5. GEOPHILIDÆ, Leach.

The *Geophilidæ* connect the Arachnidan type of *Myriapoda* with the *Annelida*, as the *Iulidæ* also connect the Crustacean type with the same class.

The *Geophilidæ* (TAB. XXXIII. figs. 10 to 19; and TAB. XL. figs. 12, 13.) have the body slender, greatly elongated, and formed of a multitude of segments, each of which bears a single pair of spiracles and legs. The number of moveable segments in this family varies from about thirty-five to more than two hundred. It is not characteristic of genera, as in the other families of *Chilopoda*, but it seems, within slight limits, to mark each particular species; although even in the individuals of each species there is a little variation. This is an exceedingly important fact, since, although the exact number of segments is not always the same in each individual, it rarely or ever exceeds certain extremes; and thus, while we are enabled to employ the average number as a character for species, we are led to important considerations with reference to the comparative physiology and development of the species, as well as of the two sexes, in the whole of the *Articulata*. Thus I have invariably found that the male *Geophili* have fewer segments than the female. The males of *Arthronomalus longicornis* have fifty-one or fifty-two leg-bearing segments, while the females usually have fifty-three or fifty-four. The full-grown females of *Geophilus terrestris* have eighty-three or eighty-four pairs of legs and segments, but the very young have only seventy-nine, and the males of the same species eighty-one or eighty-two. The extreme variation in these species is thus four or five segments and pairs of legs. In a large Neapolitan species, *Geophilus lavigatus*, Bruhl. the variation is somewhat greater. Thus in eight males the number varied between ninety-six and ninety-nine, while in eleven females it ranged between one hundred and three and one hundred and seven; and of two female specimens of *Geophilus sulcatus*, one individual had one hundred and thirty-six segments and pairs of legs, and the other one hundred and forty. Each of these moveable segments in the adult *Geophilus* is formed of two unequal rings, the posterior of which is much the largest, and alone bears the spiracles and legs. These rings, even in an advanced stage of the embryo, before quitting the egg, and before any appendages are developed, are themselves distinct segments of equal size, which become anchylosed to-

gether in pairs, as I have formerly stated elsewhere*, in reference to the whole of the *Articulata*; after which the posterior of the two more and more exceeds the anterior in extent of development the nearer the period of the embryo condition approaches its termination. A few days after the young *Geophilus* has left the egg, it exhibits nearly all the characters of the adult. In this respect it differs greatly from the individuals of other families of *Chilopoda*. The young *Geophilus*, like the parent, has fourteen joints to the antennæ, and this number is constant in all the species and genera of the family that have hitherto been discovered. It has also, as above shown, nearly as many segments and pairs of legs, there being only four or five less than in the adult. At all periods of growth the organs of vision are either entirely absent, or consist only of a single pair of ocelli, concealed on the under surface of the head immediately behind the insertion of the antennæ. The labium is straight, narrow, and entirely without denticulations, and is often divided by a longitudinal suture. The mandibles are somewhat conical, with the femoral portion straighter and more elongated, as compared with their size, than in the *Scolopendridæ*. The head is formed of three moveable segments: the *cephalic* (A) (TAB. XXX. figs. 3, 10 & 15.), which I have already shown (p. 288), is composed of four subsegments of the embryo (fig. 3.), united as one region; the *basilar* (B), which gives origin to the mandibles (g) and palpi; and the *subbasilar* (c), which bears the first pair of legs. The basilar and subbasilar are quite distinct from each other in *Geophilus*, *Gonibregmatus* and *Arthronomalus*, but are consolidated together in *Mecistocephalus*, the first genus of the family, as they are in the whole of the *Scolopendridæ*. The *Geophilidæ* reside constantly in the earth, and are common in light soils. They subsist in part on succulent roots, ripe fruit and decaying vegetable matter. Some of the species are gregarious, at least in their hybernacula, and are found in winter coiled up in little packets of six or eight each, in cavities of the earth only large enough to contain them, in light rich soils that have not been disturbed for several weeks. I have constantly seen them dug up in this state at the end of December in the hop-plantations in Kent.

The female of *Arthronomalus longicornis* deposits her eggs, from thirty to fifty in number, in a little packet, in a cell which she forms for them in the

* Phil. Trans. 1843, part ii. p. 244.

earth, and never once leaves them until the young are developed, which is at the end of about a fortnight or three weeks. During the whole of this time she remains in the cell with her body coiled around the eggs, incubating them, and constantly turning and attending to them. I have been so fortunate as to verify this observation several times during the last three years, and I believe this is the first recorded instance of incubation among the *Myriapoda*.

In the table of Genera and Families given in the introductory part of this Monograph (p. 276), I had connected the *Scolopendrellidæ* with the *Geophilidæ* in deference to the views of M. Gervais, and, in consequence, divided the family into two subfamilies, *Scolopendrellinæ* and *Geophilinæ*; but having since satisfied myself of the right of the first to be considered as a separate family, more closely allied to *Lithobiidæ*, the *Geophilidæ* now constitute a very natural group.

Familia 5. GEOPHILIDÆ, Leach.

Segmenta numerosa, subæqualia, singula e subsegmentis 2 completis sed inæqualibus efformata. *Antennæ* 14-articulatæ. *Segmentum anale* pedibus brevibus, styliformibus.

Genus 13. MECISTOCEPHALUS, Newport. (*Geophili maxillares*, Gervais.)

Segmentum cephalicum angustissimum, elongatum, quadratum, latitudine plùs duplò longius. *Antennæ* subapproximatæ, articulis obconicis. *Segmenta basilare subbasilareque* coalita, pedum par anticum gerentia. *Mandibulæ* incrassatæ, prominentes, margine interno denticulatæ. *Corpus* sensim attenuatum.

1. *Mecist. ferrugineus*, Koch, Deutschl. Crust. Myriap. &c. heft 3. no. 1.

2. *Mecist. maxillaris*, subvillosus, capite antennisque ferrugineis, corpore pallidè flavo, pedum paribus 46.

Geophilus maxillaris, Gerv. in *Ann. Sci. Nat.* Janv. 1837. sp. 2.

Hab. Prope Parisios.

3. *Mecist. punctifrons* (TAB. XXXIII. fig. 17.), capite saturatè castaneo, segmento cephalico mandibulisque profundè punctatis, corpore testaceo, mandibulis dentibus duobus acutis magnis, pedum paribus 49.—Long. unc. $2\frac{3}{10}$.

Mecist. punctifrons, Newp. in *Proc. Zool. Soc.* Dec. 13, 1842, p. 179.

Hab. In Indiâ Orientali, prope Maderaspatanam. (*v. in Mus. Brit.*)

4. *Mecist. Guildingii* (TAB. XXXIII. figs. 18, 19.), capite ferrugineo, segmento cephalico

lævigato punctis raris, mandibulis quadridentatis, labio profundè punctato, corpore testaceo, pedum paribus 49.—Long. unc. $1\frac{1}{2}$.

Hab. In Insulâ Caribæâ S^ti Vincentii, *Guilding.* (v. in *Mus. D. Hope.*)

There are five specimens of *M. Guildingii* in Mr. Hope's cabinet, and all of them, although varying a great deal in size, have precisely the same number of legs.

5. *Mecist. punctilabium*, capite mandibulis labio segmentoque subbasilari ferrugineis, mandibulis tridentatis, corpore virescenti, segmentis posterioribus antennis pedibusque ochraceis, labio densè profundèque punctato, pedum paribus 61.—Long. unc. 2.

Mecist. punctilabium, *Newp. l. c.* p. 179. *Id.* in *Ann. & Mag. Nat. Hist.* Feb. 1844, p. 100.

Hab. In Insulâ Corcyrà. (v. in *Mus. Brit.*)

GENUS 14. ARTHRONOMALUS*. (*Geophilus*, Leach. *Geophili longicornes*, Gerv.
Subgenus *Necrophlæophagus*, Newport.)

Segmentum cephalicum subquadratum, angulis rotundatis. *Antennæ* segmento cephalico triplò longiores, subapproximatæ, subattenuatæ, articulis inæqualibus, subconicis, inversis. *Segmenti basilaris* margo posterior anteriore multò latior. *Labium* emarginatum. *Corpus* subattenuatum.

A. *Segmentum cephalicum* anticè transversum.

1. *Arthron. longicornis* (TAB. XXXIII. figs. 15, 16.), flavus, capite mandibulis labioque saturatè ferrugineis, antennis pilosissimis segmento cephalico quadruplò longioribus, labio elongato medio inconspicuè sulcato lævi punctis raris, stylis analibus pilosis, pedum paribus 51 ad 55.—Long. unc. $2\frac{1}{2}$ –3.

Geophilus longicornis, *Leach in Trans. Linn. Soc.* xi. p. 386. *Id.* in *Zool. Misc.* iii. p. 45. t. 140. fig. 3–6. *Id.* in *Enc. Brit. Suppl.* i. p. 431.

Scolopendra fulva, *De Geer, Mém. Insect.* vii. p. 361. *Trevir. Verm. Schrift.* ii. p. 33. t. 7. fig. 3–5.

Geophilus electricus, *Gerv. in Ann. Sc. Nat.* vii. p. 52. *Id.* in *Dict. Pitt. d'Hist. Nat.* t. 399. f. 13. *Lucas, l. c.* p. 549. sp. 3.

Hab. Copiosissimè in Angliæ comitatibus Kent, Surrey, Middlesex, alibique. (v. in *Mus. Brit.*)

Some specimens of this Myriapod vary in having the cephalic segment and

* "ἄρθρον, a joint, and ἀνώμαλος, irregular. I have thought it better to change the name of this section of *Geophilidæ*, and derive it from characters taken from the articulations of the antennæ.

antennæ a little shorter and less hairy than others; the anal styles large, thick, and clavated; and only fifty-one, two, or three pairs of legs. These individuals, I believe, are the males, as those which have fifty-four or five pairs of legs are most certainly the females. I am supported in this opinion by the circumstance, that of two individuals presented to me by F. Bond, Esq., and which had been found by him in contact with each other at the end of the month of October, one specimen had but fifty-one pairs of legs, with the anal styles clavated, while the other had fifty-five. The specimens preserved by Dr. Leach, in the British Museum, have, with one exception, fifty-four or fifty-five pairs of legs. Of ten other specimens, collected at Wimbledon, those which have the greatest number of legs, fifty-five pairs, have the anal styles slender; while those with the smallest number, fifty-one to fifty-three, have them large and clavated, and the antennæ shorter than in the other individuals. These circumstances are confirmatory of the opinion that those with from fifty-one to fifty-three pairs of legs are males. This is an interesting fact, and proves that this species most certainly is not the *Scolopendra electrica* of Linnæus, as it has been thought to be by M. Gervais. The Linnean species is described as "*pedibusque utrinque 70.*" Another circumstance equally interesting is, that *both* the individuals, when found by Mr. Bond, *were luminous*. This seems to indicate that luminosity is common to more than one species of *Geophilidæ*, and perhaps to the whole family, and that it is evolved at the season of copulation. There is, I think, further reason for believing this to be the case, from the circumstance that I myself once found two individuals of this species on the ground in contact with each other, and which shone almost as brightly as the glow-worm, for which at the instant I mistook them. This was at midnight on the 25th of September. On taking the specimens into my hand the luminous matter was exuded and adhered to my fingers, and continued to shine for some time like phosphorus. The individuals appeared to be able to give it forth at pleasure. I omitted to examine these individuals to ascertain whether they were the two sexes*.

* The property of giving out light at certain seasons appears to be common to some tropical as well as to European *Geophili*. Oviedo, the friend and companion of Columbus, and who, about twenty years after the discovery of America, published a History of the Indies, mentions this property most distinctly when noticing the existence of *Scolopendræ* in the Island of St. Domingo, as we find in the

2. *Arthron. punctiventris*, flavus, capite saturatè ferrugineo, antennis flavis breviusculis pilosis minutè punctatis, labio plano quadrato profundè punctato, mandibulis minutè bidentatis apice nigris, appendicibus analibus lateralibus magnis punctis pilosis profundè impressis, pedum paribus 66 pilosissimis.—Long. unc. $1\frac{3}{4}$.

Necrophlæophagus punctiventris, *Newp. in Ann. & Mag. Nat. Hist. l. c.* p. 101.

Hab. In Sicilia. (*v. in Mus. Brit.*)

3. *Arthron. carpophagus*.

Geophilus carpophagus, *Leach in Linn. Trans.* xi. 385. *Id. in Zool. Misc.* iii. *Gerv. Ann. Sc. Nat.* 1837. *Lucas, Hist. Nat. Anim. Art. Newp. l. c.* sp. 1. p. 101.

Legs fifty-five pairs. Length 2 to $2\frac{1}{2}$ inches.

There are three specimens in the British Museum, preserved by Dr. Leach, but in too bad a condition to be correctly described as regards colour. One of these specimens has only fifty-one pairs of legs.

4. *Arthron. similis*, virescenti-flavus, capite antennis segmentisque analibus aurantiacis, mandibulorum apicibus unguibusque nigris, segmento cephalico elongato quadrato convexo anticè paulùm angustato posticè recto, antennis pilosis moniliformibus: articulo terminali subelongato, segmentis basilari subbasilarique æqualibus, labio lævigatò subtriangulari porcâ elevatâ medianâ, pedum paribus 55.—Long. unc. $1\frac{3}{4}$ –2.

Hab. In Angliæ comitatu Kent, prope Sandwich. (*in Mus. nostr.*)

following passage in his now almost forgotten work, for the translation of which from the original Spanish I am indebted to the kindness of my friend E. Doubleday, Esq., F.L.S.:—"There are in this island (St. Domingo) many kinds of *Scolopendra* or hundred-legs; for some are slender and as long as one's finger, and like to those of Spain, and these bite and cause considerable pain. . . . There are other of these worms about half the length of the finger, and slender, with many feet, and these shine much by night, and leave a light where they go, and may be seen fifty or even a hundred paces off; yet the whole animal does not shine, but only the joints where the legs spring from the body, and the light is very bright." These remarks most distinctly refer to some species of *Geophilidæ*, as the following sentence does perhaps to some *Annelidæ*:—"There are others, which, in all that has been stated, are very like these in size and in shining, but they have this great difference, that the head also shines, but the light of the head is that of a very bright burning coal." In reference to the true *Scolopendra*, he says:—"In the city of St. Domingo I have often seen some of these hundred-legs or *Scolopendras* as long or longer than a span, and as wide as one's thumb, and certainly they seem things to be afraid of. They have tawny stripes at the origin of the legs, and the horns (antennæ) are tawny, and the body darker; but though they are animals of evil aspect, I have heard no one complain of their bites, and I did not like to try them, for though they might not do mischief, it seems as though they can be suspected of nothing but evil."—*Oviedo, Cronica de las Yndias*, lib. 15. cap. 2. fol. 113.

I have two specimens of this species, which I regard as distinct from *Geophilus carpophagus* of Leach. They differ from Leach's species in colour, have the body and legs much stouter, the cephalic segment longer and the posterior margin straighter, with the labial border narrower and the antennæ less hairy.

5. *Arthron. Hopei*, aurantiacus, labio lævi polito minutè bidentato levissimèque longitudinaliter sulcato, antennis brevibus pubescentibus, laminis dorsalibus lævibus convexis lateribus rotundatis longitudinaliter bisulcatis, pedibus (maris) utrinque 61.—Long. unc. $1\frac{6}{10}$.

Hab. Prope Neapolin. (v. in *Mus. D. Hope.*)

6. *Arthron. flavus*, capite corpore pedibusque flavis, mandibulorum apicibus nigris, segmento cephalico lævigato impressionibus duabus lateralibus angulis posticis acutis, antennis pubescentibus segmento triplo longioribus, labio lævi, mandibulis obsoletè punctatis, pedum paribus 69.—Long. unc. $2\frac{1}{2}$.

Hab. In Angliâ, prope Gloucester. (in *Mus. nostr.*)

This specimen, which I received from Gloucester, is a male, the female of which species has probably seventy pairs of legs. It agrees well with the Linnean description of *Scolopendra electrica*, having the body almost linear, with the number of legs described. I have preferred adopting a characteristic name while there remains any doubt of the identity of the true Linnean species.

B. Segmentum cephalicum anticè subproductum.

7. *Arthron. opinatus*, aurantiacus, capite corporeque latis, segmento cephalico cordato quadrato subimbricato, antennis brevibus pilosis, labio valdè elongato lato lævi nitido mandibulisque obscurè punctatis, pedibus utrinque 52–54.—Long. unc. $2\frac{1}{10}$.

Hab. In Novâ Hollandiâ et Ins. Van Diemen? (v. in *Mus. Brit.*)

The very peculiar form and subimbrication of the cephalic segment, and the almost uniform size of all the segments of the body, without narrowing or enlargement of the posterior ones, induce me for the present to place this species in a separate section, as it may, perhaps, hereafter form the type of a new subgenus. Being the first species of the family hitherto received from Australia, from whence I had expected to receive *Geophili*, I have named it *A. opinatus*.

GENUS 15. GONIBREGMATUS, *Newp.*

Antennæ filiformes, subapproximatæ. *Segmentum cephalicum* breve, transversum, cordiforme, anticè acutè triangulare; *basilare* cephalico latius, subbasilari brevius. *Mandibulæ* magnæ arcuatæ, prominentes, contortæ. *Labium* brevissimum, transversum, margine integro prominente. *Corpus* subconvexum, elongatum, æquale; segmentis numerosis, posterioribus 2 vel 3 incrassatis tuberosis.

1. *Gonib. Cumingii* (TAB. XXXIII. fig. 11-14; TAB. XL. fig. 12.), cinerascens, segmento cephalico convexo posticè rotundato, mandibulorum apicibus nigris, labio lævi, segmentis brevibus convexis irregulariter longitudinaliter sulcatis, segmenti antepenultimi laminis dorsalibus ventralibusque atrophiatis, stylis analibus posticè carinatis, pedum paribus 161.—Long. unc. $4\frac{3}{4}$ -5.

Gonib. Cumingii, *Newp. in Proc. Zool. Soc.* Dec. 1842. p. 180. *Id. in Ann. Nat. Hist.* Feb. 1844. p. 101. sp. 1.

Hab.—In Insulis Philippinis, *Cuming.* (v. in *Mus. Brit.*)

GENUS 16. GEOPHILUS, *Leach.*

Antennæ approximatae. *Segmentum cephalicum* parvum, breve, subtriangulare, anticè angustatum, posticè dilatatum transversum. *Corpus* depressum anticè attenuatum; segmentis pedibusque numerosis. *Styli anales* breves, antenniformes.

A. *Antennæ* filiformes.

1. *Geoph. acuminatus*, totus ferrugineus anticè valdè attenuatus, antennis moniliformibus pilosis, segmento cephalico triangulati convexo, labio brevissimo, pedum paribus 41.—Long. unc. 1-1 $\frac{1}{2}$.

Geoph. acuminatus, *Leach in Linn. Trans.* xi. p. 431. *Id. in Enc. Brit. Suppl.* i. p. 431. *Id. in Zool. Misc.* iii. p. 45. *Gerv. in Ann. Sc. Nat.* 1837, p. 52. *Koch, Deutschl. Crust. Myriap. &c.* heft 9. no. 6? *Lucas, l. c.* p. 549. sp. 8. *Newp. l. c.* p. 101.

Hab. In Angliâ. (v. in *Mus. Brit.*)

The only individual of this species preserved in the British Museum is not more than one inch in length, although Leach states it to be one inch and a half. It is a male specimen, having the anal styles very large and thick, but it has only forty-one pairs of legs. I have never yet obtained Leach's species alive.

2. *Geoph. maritimus*, Leach in Zool. Misc. iii. p. 44. t. 140. f. 1, 2. Gerv. l. c. sp. 9. p. 53. Lucas, l. c. sp. 9. p. 550.

I am quite unacquainted with this species, of which there is no specimen in the Museum, although Leach describes it as very common on the sea-shore.

3. *Geoph. rubens*, saturatè aurantiacus, lineâ medianâ duplici nigrâ e segmento corporis primo ad penultimum ductâ, segmento cephalico subcordato, antennis pilosis, labio mandibulisque lævigatis punctis raris, mandibulis nigris, pedum paribus 50.—Long. unc. $1\frac{1}{4}$.

Geoph. rubens, Say in Journ. Acad. Nat. Sci. Phil. vol. ii. Id. Œuvr. Entom. i. p. 25. Gerv. in Ann. Sc. Nat. 1837, p. 52. Lucas, l. c. p. 549. sp. 5. Newp. l. c. p. 101.

Hab. In Americâ Boreali. (v. in Mus. Brit.)

The specimen from which the character is taken was one of Say's original specimens.

4. *Geoph. breviceps*, totus ferrugineus, segmento cephalico convexo lævigato subtriangulari anticè rotundato lineâ impressâ transversâ posticè truncato, segmento basilari subbasilari breviorè, antennis segmento cephalico ferè triplò longioribus pubescentibus moniliformibus, labio brevi lævigato lineâ medianâ impressâ, pedum paribus (in mare) 53.—Long. unc. 1.

Hab. In Angliâ. (in Mus. nostr.)

I have but a single specimen of this species, which exhibits a curious abnormal development of the left antenna, which has but nine articulations, but these are longer than in the right antenna.

5. *Geoph. Vesuvianus*, ferrugineus, fasciis duabus longitudinalibus saturatioribus, segmento cephalico lævi convexo subtriangulari anticè rotundato, antennis elongatis moniliformibus pilosis, labio brevissimo lunato anticè excavato, pedum paribus (in mare) 69.—Long. unc. $1\frac{4}{10}$.

Hab. Prope Neapolin. (v. in Mus. D. Hope.)

6. *Geoph. Humuli*, flavo-ferrugineus, segmento cephalico angusto subquadrato elongato anticè rotundato posticè recto, segmento subbasilari angustissimo, antennis pilosis apice acutis: articulis basalibus parvis, labio longitudinaliter cristato, mandibulis apice nigris, pedum paribus 71.—Long. unc. $1\frac{3}{4}$.

Hab. In cultis Humuli Lupuli in Angliæ comitatu Kent. (v. in Mus. Brit. nostroque.)

I have five examples of this species of different sizes. It is very common in the hop-plantations in the neighbourhood of Canterbury, where it is supposed to be injurious to the plant by attacking the root. This species hibernates in little packets of six or eight, coiled up together in the form of a ball, in holes just large enough to contain them, in light soils that have remained for some time undisturbed.

7. *Geoph. Whitei*, capite aurantiaco, corpore flavo-virente, segmento cephalico brevi subcordato, antennis nudis moniliformibus, labio leviter longitudinaliter cristato utrinque obliquè sulcato, pedum paribus 74.—Long. unc. $1\frac{1}{4}$.

Hab. ———? (*v. in Mus. Brit.*)

I have named this species in honour of a zealous naturalist, Adam White, Esq., of the British Museum.

8. *Geoph. simplex*, Gervais in Mag. de Zool. cl. 9. no. 133. p. 37, 1835. Id. in Ann. Sc. Nat. 1837, p. 52. Lucas, l. c. sp. 4. p. 549.

Geoph. linearis, Koch, *Deutsch. Crust.* heft 4. no. 1.

Hab. In Galliâ.

Legs 80 pairs.

B. Antennæ sensim acuminatæ.

9. *Geoph. brevilabiatus*, fuscus, segmento cephalico brevi subovato transverso, basilari subbasilarique subæqualibus, labio brevissimo sublunato medio leviter cristato anticè emarginato, pedum paribus 79.—Long. unc. 2.

Hab. In Orâ Tenasserim Peninsulæ Indiæ Ulterioris. (*v. in Mus. Brit.*)

10. *Geoph. lineatus*, pallidè griseus, segmentorum lateribus lineisque duabus longitudinalibus subapproximatis saturatè cæruleis, capite antennis segmentoque anali rufis, pedum paribus 77.—Long. unc. $3\frac{1}{2}$.

Hab. In Honduras. (*v. in Mus. Brit.*)

This very beautiful species has the cephalic segment red, smooth and subcordate, the labium short, smooth, and with two lateral impressions; the dorsal plates rounded at the sides, with free elevated margins, and with two blue patches between three longitudinal sulci, and there is a dark blue line on each side above the spiracles.

11. *Geoph. subterraneus* (TAB. XXXIII. fig. 10.), flavus, capite ferrugineo parvo, corpore posticè incrassato, segmento cephalico subtriangulari anticè acuto, antennis flavis basi

crassis vix pubescentibus, labio mediocri lævigato lineâ elevatâ medianâ, appendicibus analibus lateralibus subtuberosis profundè punctatis, pedum paribus 78-83.—Long. unc. $3\frac{1}{2}$.

Geoph. subterraneus, *Shaw in Linn. Trans.* ii. p. 7. *Leach in Linn. Trans.* xi. p. 385. *Id. in Enc. Brit. Suppl.* i. p. 431. *Id. Zool. Misc.* iii. p. 44. *Gerv. in Ann. Sc. Nat.* 1837, p. 52. sp. 7. *Lucas, l. c.* p. 549. sp. 7. *Newp. l. c.* p. 101.

Hab. In Angliâ. (*v. in Mus. Brit.*)

There are four examples of this species preserved by Dr. Leach in the Museum cabinet, the longest of which is three inches, and has 83 pairs of legs; and the most minute is only seven-tenths of an inch, and has but 78 pairs.

12. *Geoph. lævigatus*, Brullé, Expédit. Scientif. de Morée, Ins. p. 62. pl. 28. f. 14. Gervais, *Ann. Sc. Nat.* 1837, p. 52. *Id. Mag. de Zool.* cl. 9. pl. 137. f. 2. Lucas, l. c. sp. 12. p. 550.

Hab. In Peloponneso.

Legs 100 pairs.

13. *Geoph. Barbaricus*, ferrugineo-fuscus lineâ longitudinali saturatiore a capite ad segmentum corporis penultimum ductâ, segmento cephalico acuto triangulari, corpore sensim dilatato, segmentis 8 vel 10 posterioribus angustatis, stylis analibus brevibus crassis, pedum paribus (in mare?) 110-118.—Long. unc. $3\frac{1}{2}$.

Geoph. Barbaricus, *Gerv. in Mag. de Zool.* cl. 9. pl. 133. f. 3. p. 10. *Id. in Ann. Sc. Nat.* 1837, p. 53. *Lucas, l. c.* p. 551. sp. 14. *Newp. l. c.* p. 101.

Hab. In Africâ Boreali, Tripoli. (*v. in Mus. Brit.*)

14. *Geoph. sulcatus*, Brullé, Expédit. Scientif. de Morée, pl. 28. fig. 2. p. 62. Gervais, *Ann. Sc. Nat.* 1837, sp. 13. p. 53. Lucas, l. c. sp. 13. p. 550.

Hab. In Peloponneso.

Legs 140 pairs.

15. *Geoph. Gabrielis*, Linn. Syst. Nat. Fabr. Ent. Syst. ii. p. 392. Gervais, *Ann. Sc. Nat.* 1837, sp. 10. p. 53. Lucas, l. c. sp. 10. p. 550.

Scolopendra semipedalis, *Dufour, Ann. Génér. des Sc. Phys.* t. vi. p. 317. pl. 96.

Hab. In Hispaniâ et Italiâ.

Legs 148 pairs.—Length 6 to 7 inches.

16. *Geoph. Lefebvrei*, Guérin, Iconog. du Règne Anim. de Cuv., Ins. pl. 1. fig. 10. Lucas, l. c. sp. 16. p. 551.

Hab. In Ægypto.

Legs 159 pairs.—Length $6\frac{1}{2}$ inches.

17. *Geoph. Xanthinus* (TAB. XL. fig. 13.), totus aurantiacus, segmento cephalico subtriangulâ anticè acuto posticè transverso, antennâ basi crassissimis segmento cephalico vix duplò longioribus, labio brevi lævi posticè rotundato lineâ elevatâ medianâ rubrâ: margine producto dentibus 2 minutis, angulis lateralibus mandibulorum apicibus unguibusque nigris, segmentis præanalibus penultimis ad latera laminis magnis scarbis vestitis, stylis analibus parvis, pedum paribus 162.—Long. unc. $6\frac{1}{2}$ –7.

Hab. In Lyciâ, in valle fluvii Xanthi, *Fellows*. (v. in *Mus. Brit.*)

There are three examples of this fine species in the British Museum, brought to this country by Sir Charles Fellows. They agree precisely in character, except in length. They seem to approach very near to the next species.

18. *Geoph. Walckenaeri*, Gervais, Mag. de Zool. cl. 9. p. 133. fig. 1. p. 8. Id. Ann. Sc. Nat. 1837, p. 53. Lucas, l. c. sp. 11. p. 550.

Hab. Prope Parisios.

Legs 163 pairs.—Length $7\frac{1}{2}$ inches.

19. *Geoph. Savignianus*, Gervais, Ann. Sc. Nat. 1837, p. 53. Lucas, l. c. sp. 15. p. 551. Scolopendra, Savigny, D.

Hab. In Ægypto.

Legs 210 pairs.—Length 3 inches.

Species of *Geophilidæ* which I have been unable to identify from imperfect descriptions :

Geoph. hortensis, Koch, Deutsch. Crust. 22. heft 1.

Geoph. subtilis, Koch, Deutsch. Crust. etc. 22. heft 2.

Geoph. phosphorea, Linn. Gmel. Syst. Nat. ii. p. 1064. sp. 4.—Asia.

Geoph. occidentalis, Linn. Gmel. Syst. Nat. ii. p. 1064. sp. 10.—America.

Geoph. angustatus, Esch. Mém. de la Soc. Imp. Mosc. vi. p. 112.

Geoph. longissimus, Risso, Hist. de l'Europ. Mérid. v. p. 155.

Geoph. attenuatus, Say, Journ. Acad. Nat. Sc. Philad. vol. ii. part 1. p. 113.

DESCRIPTION OF TAB. XL.

- Fig. 1. *Cermatia trilineata*, Newp.
Fig. 2. *Lithobius variegatus*, Leach.
Fig. 3. *Henicops maculatus*, Newp.
Fig. 4. *Scolopendrella immaculata*, Newp. :—magnified.
 a. Natural size.
 b. The antennæ magnified.
 c. A leg magnified.
Fig. 5. *Scolopendra viridicornis*, Newp. *S. Hopei*, Newp. MSS.
Fig. 6. Inferior surface of the head of the same.
Fig. 7. *Branchiostoma spinicauda*, Newp.
Fig. 8. *Heterostoma spinosa*, ♂. Newp.
Fig. 9. *Heterostoma megacephala*, Newp.
Fig. 10. *Scolopocryptops longitarsis*, Newp.
Fig. 11. *Cormocephalus lineatus*, Newp.
Fig. 12. *Gonibregmatius Cumingii*, Newp.
Fig. 13. *Geophilus Xanthinus*, Newp.